IMPERIAL
DEPARTMENT OF AGRICULTURE
FOR THE WEST INDIES.

IMPERIAL BUREAU
15 OCT 1928
OF MYCO

REPORT

ON THE

AGRICULTURAL DEPARTMENT, ST. LUCIA, 1927.

ISSUED BY THE IMPERIAL COMMISSIONER OF AGRICULTURE FOR THE WEST INDIES.

CASTRIES
24 SP
28
ST LUCIA

[Price Sixpence.]

PRINTED BY THE GOVERNMENT PRINTER AT THE GOVERNMENT PRINTING OFFICE,
CASTRIES, ST. LUCIA.

1928.

FORWARDING DISEASED SPECIMENS FOR EXAMINATION.

PLANTS.

A few fragments of a diseased plant are of practically no value for scientific investigation.

Sufficient material should always be sent so that the primary cause of the trouble may be located.

Full particulars should be given as to the nature and extent of the damage done, the part of the plant attacked, the nature of the soil, drainage, the prevalence of disease, when it was first noticed, and whether any similar kind of disease has been previously observed in the neighbourhood.

Specimens of portions of plants attacked by fungi may be sent green packed in a well-ventilated box if the time taken for delivery is under 24 hours, but if delivery takes a longer time all leaves or soft fruits should be placed in a bottle or corked tube containing a solution made of 1 part of rum or methylated spirit and two parts of water. As many stages of the disease as possible should be sent, with notes as to the nature of each stage.

All specimens should be accompanied with detail particulars of the nature of the disease and should be addressed to :—

THE AGRICULTURAL SUPERINTENDENT,
BOTANIC GARDENS,
CASTRIES.

INSECTS.

Observations and specimens of economic importance or otherwise will always be gladly received.

The following directions should be observed in this respect :—

Living insects should be placed with a supply of the plant on which they are found feeding and the box should have small holes pierced for the purpose of ventilation. This should be carefully packed in such a way as to prevent their becoming crushed in transit.

If it is desired to preserve specimens they should be put in bottles with tightly fitting corks, methylated spirits, diluted rum, etc., making excellent preserving fluids.

Scale insects, etc., should be forwarded on the portion of the plant on which they are found.

If in doubt as to the best method of forwarding specimens, a letter should be sent asking for instructions and stating full details.

In all cases full particulars should be forwarded as to the nature and extent of damage done, along with any other important points that may have been noticed.

All specimens should be addressed :—

THE AGRICULTURAL SUPERINTENDENT,
BOTANIC GARDENS,
CASTRIES.

IMPERIAL
DEPARTMENT OF AGRICULTURE
FOR THE WEST INDIES.

REPORT

ON THE

AGRICULTURAL DEPARTMENT,

ST. LUCIA,

1927.

ISSUED BY THE IMPERIAL COMMISSIONER OF AGRICULTURE
FOR THE WEST INDIES.

[Price Sixpence.]

PRINTED BY THE GOVERNMENT PRINTER AT THE GOVERNMENT
PRINTING OFFICE, CASTRIES, ST. LUCIA.

1928.

No. C.A. 106.

TRINIDAD,
4TH MAY, 1928.

LETTER OF TRANSMITTAL.

Commissioner of Agriculture to the Administrator, St. Lucia.

Sir,

I have the honour to transmit herewith the Report on the working of the St. Lucia Agricultural Department for the year ended December 31, 1927.

2. The report indicates that the usual routine matters have been attended to and that the Botanic Gardens and the Reunion Station have been maintained during the year. It is a matter of regret that the Botanic Gardens are located in a situation so unsuitable for the purpose, since the results that can be obtained there are not likely to be commensurate with the effort expended in their upkeep. The Agricultural Station at Reunion, also, is only partially suitable for the purposes for which it is used and the distance from Castries makes administration difficult.

3. The heavy rainfall and consequently high humidity of the year have been unfavourable to the production of satisfactory crops of limes in most districts of the Island, and as a result the exports of limes and lime products may be expected to show a considerable falling off. The condition of the coconuts in the Island was on the whole very good and the position with regard to cacao and sugar appears not to have changed much during the year.

4. It is reported that more attention is being paid to the cultivation of the cacao and the preparation of the beans and that there is a tendency for co-operation in the production of sugar, both of which may be taken as giving promise for improvement in the future.

5. The reports on the Agricultural Instruction in the Primary Schools and on the Lectures in Agriculture to School Teachers indicate that good work is being continued under both these heads.

6. The report on the Agricultural Credit Societies indicates, however, that a very unsatisfactory condition still exists. The lack of real co-operation in the organisation of these Societies would appear to be largely responsible for their failure.

7. I desire to strongly support Mr. Walters' suggestion that action should be taken without delay to wind up these Credit Societies. It would appear that neither Trustees nor Members attend meetings, no payments on loans are being made in most cases and interest charges are accumulating.

8. It is manifestly unfair to the Agricultural Department that its officers should continue to be charged with the duties of collecting these debts where it is obviously the intention of the members not to pay if it can be avoided. This situation reacts on the usefulness of the Department causing, as it does, a relationship which is wrong in principle between the Agricultural Officer and the delinquent peasant, and the longer such a situation is allowed to exist, the more difficult will it become to overcome its effects.

9. Mr. Walters makes a suggestion as to the methods which might be adopted to terminate the whole business of these Societies and thus secure immediate relief from a very unsatisfactory state of affairs.

10. Commendable efforts appear to have been made to meet the situation created by the failure of the Banana Company and by the effect of the Wither-tip disease of limes, by increased attention to the production of other crop plants for distribution.

I have, &c.,

(Sgd.) H. A. BALLOU,
Commissioner of Agriculture,
Imperial College of Tropical Agriculture.

STAFF OF THE AGRICULTURAL DEPARTMENT, ST. LUCIA.

E. A. Walters, F.R.H.S., F.R.Met. Soc. ..	Agricultural Superintendent and Land Officer.
R. W. Niles	Assistant Agricultural Superintendent.
E. L. Daniel	Foreman, Agricultural Experiment Station, Reunion.
W. W. Arno	Clerk to Agricultural Superintendent.
Clement Wardrope	Foreman, Botanic Gardens, Castries.
Simon Joseph Bennett Williams	Banana Inspectors.

CONTENTS.

	Page.
Work in the Botanic Gardens, and Observations on Plants ..	1
Note on Chaulmoogra oil plants, *Hydnocarpus spp.*	
Agricultural Experiment Station, Reunion	2
Plant and Seed Importation, Seed and Plant Exchange, Work at the Experiment Station, Plant Distribution.	
Notes on Plots at the Experiment Station, Reunion	4
Sugar-cane Varieties, Bay trees, Coconuts, Common Limes, Spineless Limes, Lime Hybrids, Pine-apples, Bananas, Coffee, Camphor, Citrus plots, Mango plots, Cotton, African Oil Palms, Demonstration plots of Ground Provisions (Sweet Potatoes, Yams, Cassava.)	
Forest Conservation	10
Control of Insect Pests	10
Cacao and Bananas.	
Control of Fungus Diseases	10
Wither-tip and Blossom blight of Limes, Root disease of Cacao, Panama disease of Bananas, Budrot of Coconuts, Gumming disease of Sugar-cane.	
Plant Quarantine, Diseases and Pests within the Colony	11
Animal Quarantine. Farm Stock	12
Identification and Analysis	12
Analysis of Molasses and Rum, Examination of Raw Lime Juice, Plants and plant products.	
Visit of Agricultural Superintendent to Cadbury Bros., Ltd., Bournville	15
Progress in the Chief Industries	16
Sugar, Rum, Cacao, Limes, Coconuts, Bananas.	
Progress in Minor Industries	17
Bay Oil and Bay Rum, Ground Provisions.	
Exports from St. Lucia	18
Agricultural Instruction	19
Primary Schools, Examination of Teachers, Lectures to Teachers, Lectures to Pupil Teachers, Agricultural Work in Country Districts.	
Agricultural Credit Societies	23
Administration	28
Reunion Estate and Land Settlement, Correspondence, Expenditure and Revenue, Official Visitors, Staff Changes.	
Meteorological Observations	29
Appendix I.	
Appendix II.	
Appendix III.	

SAINT LUCIA.

Report of the Agricultural Department for the year ended December 31, 1927.

WORK IN THE BOTANIC GARDENS, AND OBSERVATIONS ON PLANTS.

Continuous attention has been given to upkeep of the Botanic Gardens throughout the year, but the results attained have not been encouraging. Owing to the proximity of the Gardens to the sea, the low lying portions form a natural breeding ground for crabs which devour the smaller plants and lawn grasses. The routine work alone involves a continuous expenditure of labour on replacing these plants and relaying the lawns, which, in a more favourable site would when once planted become permanent features. With restricted expenditure this utility work can only be carried out slowly, and little progress can be made towards beautifying the Gardens with choice plants.

Cyanogas and poison baits have been used against crabs with some success, but efforts have been directed mainly to the filling in of useless drains, and these have now been converted into lawns, thus to some extent reducing the breeding places.

Work generally has been much hampered by the unusually wet year, on two occasions, March 5th, and November 12th, the Gardens were partially flooded by storm water and the main canal was filled with silt, from the adjacent hills.

The Gardens will continue to be subject to flooding and subsequent crab infestation until a concrete central canal with sluice gate can be erected, to provide for the quick egress of flood water and mud, and to prevent the entrance of sea water.

The small concrete dam erected last year as an experiment has prevented much flooding by high tides and has considerably simplified this side of the problem.

The Java grass, *Polytrias praemorsa*, brought from Trinidad last year, has been planted on lawns in several places and seems to resist the attacks of crabs and flooding better than the indigenous grasses ; of these, Lawn grass (*Axonopus compressus*, Beauv.) and Bermuda grass or Devil grass (*Cynodon dactylon*) are most serviceable under local conditions.

The central palm circle consisting of three Royal Palms, (*Oreodoxa regia*) surrounded by tall golden fruited palms, (*Chrysalidocarpus lutescens*) was removed during the year, the palms have been replaced by a selection of roses, with a centre of one specimen of the Norfolk Island Pine (*Araucaria imbricata*). In addition, the following ornamental and economic trees have been planted out in the Gardens, the Elang-Elang (*Cananga odorata*), two trees of *Juniperus bermudiana*, two Chaulmoogra oil trees (*Hydnocarpus Wightiana*,) and Lignum vitæ (*Guaiacum officinale* L.)

The usual trees and borders flowered somewhat sparsely during the wet year; the Nux Vomica tree (*Strychnos Nux Vomica* Linn.) fruited heavily, and the largest Nutmeg tree made a good crop of fruit, yielding about 20lb. of nutmeg and mace.

The type of nutmeg yielded by this tree grades at about 76 to the pound, free of shell and mace, and is therefore a valuable type for marketing purposes.

The tree is being used in propagation work by approach and bottle-grafting.

A large stock of economic and ornamental plants was propagated and sold or distributed gratis from the nursery during the year.

Attention to the nursery is now necessary as the shade structures are in bad repair, and it will become necessary to renovate the nursery throughout during the new year.

Note on Chaulmoogra oil plants, Hydnocarpus spp.

Seeds of *Hydnocarpus Anthelmintica*, were received from the Director of Botanical Section, Ministry of Commerce, Bangkok, through the Chief Medical Officer, St. Lucia, in pursuance of the campaign against leprosy and allied skin diseases, conducted by the British Empire Leprosy Relief Association. About 5lb. of seed was handed over to this Department for germination and culture ; the seeds were sown under shade in boxes and at present about 18 per cent. have germinated and are forming healthy plants.

The value of the two species, *Hydnocarpus Anthelmintica and Hydnocarpus Wightiana*,—the latter being brought by the writer from Trinidad last year,—lies in the fact that both trees produce seeds containing chaulmoogra and hydnocarpus oils, and that the principal constituents of these oils are two fatty acids known as Chaulmoogric and Hydnocarpic acid, and following improvement in technique it has been found that derivatives of the acids when administered to patients cause a permanent relief and in certain cases a permanent cure, from leprosy and associated diseases.

Since the seeds also contain a toxic principle which gives rise to prussic acid, it is inadvisable to eat the seeds in order to obtain the oils, as poisoning may ensue.

Owing to a small supply of seed from trees in the wild state, the establishment of plantations of these trees is an early necessity in order to ensure a supply of the oils.

The following notes on cultivation of *Hydnocarpus Anthelmintica* were provided by Dr. A. F. G. Kerr, Director of Botanical Section, Bangkok, and are inserted as a guide to planters who might be interested in this tree ; the notes on cultivation also refer to *Hydnocarpus Wightiana.*

" In its natural state *Hydnocarpus Anthelmintica* is usually found on a sandy loam and near water, either on the banks of rivers or on the edges of marshes. Occasionally it grows on mountains at an altitude of about 800—1,000 metres. It is an evergreen tree itself and its associates are mostly evergreens ; the seedlings come up in fairly dense shade, on ground that has a good top layer of leaf mould.

" In cultivation it can be grown with only partial shade and the seedlings are able to stand a fair amount of sun, but they should have some shade. They do well in a mixture of clay, sand and leaf mould, and should have plenty of drainage. During dry weather they should be watered every other day. The tree is often cultivated in the stiff Bangkok clay and is even planted along road-sides, but does not do so well as under its natural conditions. Growing naturally, the trees along the river banks are subjected to occasional floodings during the rains, but for 6 to 7 months of the year they are well above water level. Groves of pure stands of wild trees are frequent, and in such situations the trees are about 12—20 metres apart.

" There is no exact information as to the age when the tree begins to bear, but, judging from the rate of growth of seedlings and size of bearing trees, it is probably not less than 8—10 years. In the forest, trees probably go on yielding fruit for many years, old trees, growing naturally, have been found with a trunk circumference of over 4 metres. The yield is rather irregular, depending a great deal on the rainfall, if the latter is deficient the crop is poor. If conditions are good trees will fruit every year.

" In a fair season an average sized tree, with a trunk measurement of about 1.20 metres, will yield some 200 fruit.

" The number of seeds in each fruit varies considerably, on a good tree from 25 to 115 in each fruit, but the average for healthy trees may be taken as 65 : that is a total of 13,000 seeds for the whole tree. Mr. Marcan, Director of the Government Laboratory, Bangkok, estimates the average weight of 100 dry unhusked seeds to be 136.2 grams.

Note on Climate.

" The region where Hydnocarpus Anthelmintica most commonly grows has an annual rainfall of about 1,270 mm. (50 inches), distributed chiefly over the months May to October. Long dry spells are usual during the other months. The mean temperature is about 27 C. (81 F.) with extremes of about 40 C. (104 F.) maximum and 14 C. (57 F.) minimum." . . . .

It will be interesting to watch the development of the two species under local conditions, the two plants of *Hydnocarpus Wightiana* in the Botanic Gardens are now about 2 feet 6 inches high, planted in sandy loam under light shade, and are making good progress.

AGRICULTURAL EXPERIMENT STATION, REUNION.

The following plants and seeds have been introduced and are gratefully acknowledged:—

Yam plants—variety " Purple Ceylon" and " Potato" from the Department of Agriculture, Porto Rico; seeds of valuable timber trees, e.g. Mahogany (*Swietenia macrophylla* King); Cedar (*Cedrela mexicana* Roem ; Pine (*Pinus caribaea* Mon); Polak (*Ochroma bicolor* Rowlee); Quamwood (*Schizolobium parahybum* (Vell) Blake); Billy Webb (*Sweetia panamensis* Benth); and Bullet tree)*Bucidia Buceras* L.) from the Conservator of Forests, British Honduras. Of these the Pine, Quamwood and Polak have successfully germinated.

Seeds of *Hydnocarpus Anthelmintica* were received from the Director of the Botanical Section, Ministry of Commerce, Bankok, through the Chief Medical Officer, St. Lucia.

Seed and Plant Exchange.

Seeds and plants were exchanged with planters in the Colony, and Bengal beans and other plants were distributed free.

WORK AT THE EXPERIMENT STATION.

This Station is in charge of a Foreman, and the work is now principally in connection with the propagation and trial of plants for distribution to planters. Quarantine work is conducted on plants introduced to the Colony, and in this connection mention should be made of a large number of new seedling canes introduced and established under observation at the Experiment Station, for early distribution to the principal cane estates.

A series of demonstration plots of ground provisions which have been arranged for the benefit of the small holder are described elsewhere.

New methods of propagation have been tried, the most successful being bottle grafting which shortens the time necessary for union of stock and scion to about six to eight weeks in favourable weather, and has been tried both under shelter and outside in nursery beds.

Increased propagation and distribution of oranges, grape-fruit, and mangoes is recorded, and a decreased demand for seedling limes owing to the outbreak of Wither-tip disease in March, 1927.

Attention is being given to the budding of the West Indian lime on to sour orange stock, and a small supply of budded plants is now becoming available.

The number of plants distributed during the year from both Stations, is shown below:—

Plants, Seeds, and Cuttings, distributed during 1927.

	1927. (Number.)	1926. (Number.)
Plants—Economic		
Lime (seedlings)	10,385	13,702
,, (budded)	2	...
Citrus (budded)	201	102
Mango (grafted)	154	115
Pineapple (plants)	...	29
Dolichos (plants)	150	200
Coffee Robusta	150	...
Melinis (clumps)	250	200
Elephant grass (clumps)	150	60
Bay trees	72	...
Casuarina	50	...
Alfalfa	125	...
Eucalyptus	200	75
Forest trees	257	...
Various Economics	161	364
Total	12,307	14,847
Vegetable seedlings (boxes)	...	3
Miscellaneous (number)	...	5
Total	12,307	14,855
Cuttings—Economic		
Cane plants	6,100	4,300
Various (for wind-breaks)	...	500
Sweet Potatoes (cuttings)	2,000	300
Cassava (cuttings)	5,300	2,500
Total	13,400	10,300
Seeds—Economic		
Horse beans	25 lb.	112 lb.
Sea Island Cotton Seed	...	36
Onions	3 lb.	1 lb.
Vegetable seeds (packets)	74	57
Plants—Ornamental		
Miscellaneous	326	278

NOTES ON PLOTS AT THE AGRICULTURAL EXPERIMENT STATION, REUNION.

WORK ON SUGAR-CANE VARIETIES.

The selection of varieties of canes at Reunion has been further increased by the importation of some of the best canes in Barbados, including Ba11569; B67; B409; B147 and B472. Of the latter variety, B472, the Assistant Director of Agriculture, in forwarding the cane stated that it showed great promise.

The cane selection plots have been manured and weeded and new drains have been dug. The canes are doing well and continue to furnish material for supplying estates when required.

It is hoped that the principal cane estates and cane planters generally will utilise more of the selected canes in order to form nuseries for replacing worn out varieties. Such a policy is essential to prevent the progressive deterioration which takes place in all canes, particularly those of long standing cultivation on the same site or on unsuitable types of land. Such deterioration is shewn (a) by incidence of true parasitic diseases, such as Mosaic disease and Gumming disease, (b) occurrence of saprophytic diseases such as root diseases and leaf spot diseases, which ordinarily are present only as secondary factors, but in the presence of a weakened host plant may assume parasitic conditions (c) reduction in tonnage of cane per acre, (d) reduction of sucrose per ton of cane.

The following list of cane varieties cultivated by the Department with their chief characteristics and commercial value, has been drawn up to assist the cane planter in his search for a variety suited to his needs. If possible the canes should be examined *in situ* at Reunion.

The figures representing field and factory returns are abstracted from current literature on sugar cane experiments conducted by the Departments of Agriculture, Antigua (1) and Barbados (2), and should serve as a guide in selecting varieties.

Notes on resistance or susceptibility of these canes to disease are to be found under section Control of Fungus Diseases.

(1) Sugar-cane Experiment in the Leeward Islands, 1923—24 and 1925—26—27.
(2) Report on Sugar-cane Experiments 1924 —1926, Barbados.

Character of Cane.

Cane.	Habit.	Foliage.	Stem.	Eye-bud.	Remarks.
B.H. 10 (12)	Erect.	Broad, light green leaves.	Straight, stoutish, no channel, colour brownish green.	Pointed and bulging.	Tendency to bud.
Ba. 6032	Erect.	Broad, light green leaves,	Slightly crooked, fairly stout. Reddish, with white stripes.	Rounded, bulging.	Tendency to bud.
Ba. 11569	Erect.	Green, distorted at apex.	Internodes long, no channel, dirty yellow.	Round and pointed, medium size, white ring under bud.	Long cane, stools freely.
B. 67	Erect.	Medium, broad light green leaves.	Moderately stout, zigzag. internodes slightly bulging, colour dirty brown to grey.	Broad, flat pointed apex, prominent white ring.	Stools moderately.
B. 147	Inclined to trail.	Broad, dark green leaves.	Stoutish, internodes long. marked channel. Green to yellow.	Small, flat, depressed, adherent.	Somewhat difficult to establish.
B. 156	Erect.	Medium, light green leaves.	Stoutish, zigzag, internodes long. Greenish yellow.	Broad at base, blunt, protruding.	Arrows freely, trash clings.
B. 208	Erect.	Very broad, dark green leaves.	Stoutish and slightly bulging, moderately long.	Rounded and bulging, prominent.	Early maturing, readily grown, high saccharine content of juice.
B. 409	Erect.	Narrow, dark green leaves.	Medium size, slightly zigzag. internodes cylindrical, colour bluish grey with olive green.	Conical and prominent with prominent ring.	Buds readily.
B. 417	Inclined to trail.	Broad, short, dark green leaves.	Medium size, long internodes, colour brownish, purple with white lines.	Small, conical and pointed.	Tendency to root at the node.
B. 472	Erect.	Very broad, medium green leaves.	Stout, cylindrical, internodes medium length, colour light green with yellow.	Round, very prominent, pointed, distinct ring.	Tendency to bud.
B. 6388	Inclined to trail.	Broad, dark green leaves.	Medium size, slightly zigzag. Grey to purple.	Rounded, protruding.	...
S.C. 12/4	Erect.	Medium broad, medium green.	Stout, oval cane, zigzag, internodes medium length, colour light green with yellow.	Long and pointed. apex prominent, distinct ring.	A heavy cane
C. 224	Erect.	Narrow, stiff light green leaves.	Medium thin, slightly zigzag, internodes long and cylindrical, colour reddish brown with green grey veneer of wax.	Round to oblong, flat, depressed and inconspicuous ring semi-prominent.	Strong stooling cane.

the Experiment Station, Reunion.

Condition of Growth.

Age of Canes.	Soil type.	Inches of Rainfall.	One Year.	Tons per acre.		Sucrose.		Place where grown.
				Canes.	Tops.	lb. per gallon of juice.	lb. per acre in juice.	
Plant canes.	Heavy clay.	53·34	1926–7	29·55	...	2·05	4,250	Antigua
Plant canes.	Black soils.	51·47	1925–6	27·20	3·02	2·22	7,829	Barbados
Plant canes.	Heavy clay.	53·34	1926–7	32·05	...	1·74	3,600	Antigua
Plant canes.	Black soils.	51·37	1925–6	27·86	3·04	1·84	6,759	Barbados
Plant canes.	Heavy clay.	53·34	1926–7	33·00	...	2·10	5,450	Antigua
Plant canes.	Black soils.	51·47	1925–6	33·06	3·80	2·11	9,042	Barbados
Plant canes.	Black soils.	51·47	1925–6	26·58	3·60	2·00	7,348	Barbados
Plant canes.	Red soils.	51·47	1925–6	33·09	6·78	1·92	8,789	Barbados
Plant canes.	...	28 to 35	1923–4	7·70	...	1·83	1,080	Antigua
Ratoon canes.	...	28 to 35	1923–4	5·10	...	1·89	690	Antigua
Ratoon canes.	... ...	28 to 35	1923–4	7·48	...	1·91	940	Antigua
Plant canes.	...	28 to 35	1923–4	9·08	...	2·05	1,350	Antigua
Ratoon canes.	...	28 to 35	1923–4	7·20	...	1·94	980	Antigua
Plant canes.	Black soil.	51·47	1925–6	28·24	4·04	2·18	7,975	Barbados
Plant canes.	Red soil.	51.47	1925–6	38·10	5·85	2·13	10,670	Barbados
Plant canes.	..	28 to 35	1923–4	12·39	...	1·90	1,770	Antigua
Ratoon canes.	...	28 to 35	1923–4	6·60	...	2·03	910	Antigua
Plant canes.	Heavy clay.	28 to 35	1926–7	30·30	...	1·92	5,450	Antigua
Ratoon canes.	Volcanic soil.	28 to 35	1926–7	16·30	...	1·91	2,010	Antigua

A small crop of canes was reaped at the Experiment Station, and made into syrup at the Factory, the Station cooperated with local small cane farmers and handled their crop on the basis of part share in the crop made. The total amount of syrup thus received by the Department was 310 gallons and this was sold locally. The expenses of the crop are in future to be provided for by an Advance Account, and the crop will not interfere with work at the Station, whilst encouraging local cane farmers to cooperate in growing and making the crop.

BAY. (*Pimenta acris*).

The crop of leaves was plucked and weighed in April, 1927, and is recorded below against yields for the seasons 1923 to 1927.

Year of crop.	Total weight of leaves. (lb.)	Average yield of leaves per tree. (lb.)
TRINIDAD VARIETY.		
1923	340	28·3
1924	426	38·0
1925 / 1926	543	49·4
1927	537	44·7
DOMINICA VARIETY.		
1923	540	45·0
1924	676·5	56·4
1925 / 1926	598	49·8
1927	657	54·7
MONTSERRAT VARIETY.		
1923	428	32·9
1924	610	47 0
1925 / 1926	561	43·2
1927	631·5	47·8
ST. LUCIA VARIETY.		
1923	224	20·3
1924	264·5	24·0
1925 / 1926	325	32·5
1927	355·7	35·5

Owing to the late crop made in October and November of 1924, the crop for 1925 was made in March 1926, the records have therefore been adjusted to allow for the absence of a crop in March or April 1925.

The trees come into full leaf during the two months March and April. No marked leaf-fall has been observed during the period between the annual pickings, but the effect of two pickings per annum is to be tested on a number of the trees during 1928, to determine whether cultivated trees will produce two crops yearly with the characteristics of the ripe leaf.

Constant picking of the leaf crop has not impaired the development of these trees, which are markedly more compact and thick set than the wild type.

Seedlings of these trees are being distributed for use in planting on bare hillsides and as windbreaks; the Bay is well suited for this work and is readily established even in dry districts, where it provides revenue with little further attention.

The management of the Bay Oil Factory buy fresh leaves at 2/- per 100lb.

COCONUTS.

The common Coconuts were manured and mulched during the year and good crowns were developed with the wet season, the leaves being particularly free from scale insects. A fair crop of nuts has been carried and these have also improved in quality. Rats have destroyed a part of the crop in spite of precautions taken to prevent this, including the banding of the trees with tin, the use of traps and poisoned baits.

The dwarf Coconuts have greatly improved in condition, assisted by applications of pen manure and sea-weed, and mulch of dry grass and leaves.

Of the nuts planted in 1921, five trees are bearing small nuts at about 2 feet from the base, the remaining five continue to flower but have not yet formed nuts. The dwarf nuts planted in 1923 are doing well.

Common Lime Plot.

Records of the yield of ripe limes from introduced trees in this plot were commenced in 1925 and have been continued for each succeeding crop, so that the crop probability for each tree is now known.

Several trees have shown consistently high yields during each season whilst others have given consistently low returns.

The trees are the variable natural seedlings of the common West Indian Lime, and it is probable that certain trees carry a factor for a high or low degree of productivity, the condition of productivity being more inherent, than induced by such local advantages as differences of soil and development, which tend to disappear owing to the equalising effects of cultivation. (3).

An instance of such variation is seen in the spineless lime, which is derived from a natural cross of the West Indian lime, and is a loose spreading tree, bearing an inferior crop.

The crop records of certain trees are entered below for reference, in order of yield. Collections of ripe limes were made every two weeks during the crop period.

Amounts of ripe limes produced by certain trees during the seasons 1925, 1926 and 1927.

Tree No.	1925. July—Dec: Crop. lb.	1926. May—Dec: Crop. lb.	1927. July—Nov: Crop. lb.	Total crop for 3 seasons. lb.	Average for 3 seasons. lb.
	Maximum Yield.				
6	345·5	216·5	139·5	701·5	233.8
11	368·2	274·7	36·0	679·0	226·3
7	196·5	235·4	169·5	601·4	200·5
24	189·5	105 3	243·7	538·5	179·5
1	209·0	185 5	142·5	537·0	179·0
	Medium Yield.				
2	177·4	98 3	108·7	384·5	128·2
14	144·0	99·7	116·0	359·7	119 9
9	151·0	116·0	75·7	342·7	114·2
18	130·2	109·5	86·0	325·7	108·5
5	114 0	103·0	92·0	309·5	103·1
	Minimum Yield.				
13	111·2	52·7	46·2	210·2	70·0
20	105·4	63·0	36·5	204·9	68·3
15	107·5	23·7	41·2	172·5	57·5
17	83·0	30·5	21·7	135·2	45·0
19	47 7	19·25	20·25	87·2	29·0

Spineless Limes.

The crops of the Spineless Limes have also been recorded for the past three seasons, and the returns of certain trees are entered below for comparison with the common lime. There appears to be nothing in favour of the spineless variety ; neither its habit of growth, nor fruit or crop value commend it, and it is equally susceptible to the Wither-tip disease as the common lime.

These trees are accordingly being replaced by the new lime hybrids obtained from Trinidad.

Tree No.	1925. July—Dec: lb.	1926. May—Dec: lb.	1927. July—Sep: lb.	Total crop for 3 seasons. lb.	Average crop for 3 seasons. lb.
	Maximum Yield.				
2	248·7	15·5	6·7	271·0	90·3
1	235·5	6·5	19·0	261·0	87·0
4	230·7	12·5	12·0	255·2	85·0
7	229·0	3·7	15·0	247·7	82·6
13	222·2	6·5	6·2	235·0	78·5
	Minimum Yield.				
5	131·5	6·7	8·2	146 5	48·8
11	70·4	1·2	2·5	74·2	24·7
9	68·7	0·0	5·0	73·7	24·5
10	37·7	0 5	0·5	38·7	12·9
16	12·7	0·0	0 0	12·7	4·2

Lime Hybrids.

With the generous cooperation of the Department of Agriculture, Trinidad, the Agricultural Superintendent was able to arrange for a collection of lime hybrids to be prepared during the year at Trinidad and these were forwarded to the Department early in 1928.

It is proposed to increase these varieties by budding on suitable stocks, during the present year, for issue to certain lime planters for estate trials. The original plants will be established adjoining the common lime plot at Reunion. A short note on these plants is therefore included in this report for the information of lime planters.

Sixty-one plants were received from Trinidad in January 1928, these are well grown plants and at present shew no withered-tips.

The plants are budded from hybrids between the West Indian lime as female parent, and *Citrus aurantifolia* (Philippine Island No. 1013) a variety immune to Wither-tip disease, used as male (pollen) parent, the crosses were made at St. Clair Experiment Station, in 1925. A number of the plants have the typical leaf of the West Indian lime, derived from the female parent, and in Trinidad this type of plant has already been found susceptible to Wither-tip disease ; but Wither-tip has not been found on other plants where the male parent is dominant.

A number of well grown plants of *Citrus aurantifolia* have been obtained and will also be established at Reunion during the year.

Pineapples.

The plot of " Black Antigua" pineapples has been kept in as good condition as possible during the year, though the wet weather has interfered with forking and the soil has become packed, consequently aeration and drainage has been affected, and some of the older plants have taken on a reddish tinge.

The plot is to be reformed by planting the pines close together in beds 4 feet wide, to which leaf mould and ADCO manure will be added. Pines sprayed with iron-sulphate in Hawaii have been found to improve in colour and growth under certain conditions of soil, and this treatment may be tried on the Black Antigua pines at Reunion.

A number of young, vigorous plants have been supplied for estate work ; other varieties which have been introduced in small numbers are being propagated for experimental work and for distribution, and include Chocona, Red Spanish, Sugar Loaf and Red Ripley pines.

Bananas.

The plots of Gros Michel and Short Fig were kept in good condition, and manure and mulches have been applied ; no experimental work was done and in view of the collapse of the banana export trade, these plots will be replanted with selected avocados which are now being prepared.

Coffee.

Several of the trees of Excelsa and Robusta Coffee were carrying a good crop of berries at the end of the year and all had greatly improved as a result of the removal and reduction of the shade trees *Gliricidia maculata*, the prunings of which were used as mulch with the addition of grasses and leaves. The Short Fig is planted as an intercrop.

Plants were raised from the supply of Blue Mountain Coffee seed imported from Jamaica and were distributed to various estates, but owing to the wet weather, growth was slow and the plants were attacked in the seedling stage by the American leaf disease, (*Omphalia flavida*, Maub. and Rangel.), which caused shedding of foliage and retarded progress. Several boxes of plants have also been raised from the crop at Reunion and have been distributed.

Camphor.

As a continuation of the enquiry into camphor as an auxiliary crop in St. Lucia, a report on which appeared in the Annual Report 1926, samples from each camphor tree were prepared and forwarded to the Imperial Institute in May in order to establish which trees produced camphor oil, or the more valuable camphor wax, twenty samples in all were forwarded, and a report on these should soon be received.

The trees have grown well and now touch each other, being twelve years of age and planted fifteen feet apart. They form a substantial windbreak which improves with pruning, the prunings yield camphor oil and wax and provide a useful secondary crop which could be readily dealt with in the lime stills during the absence of the lime crop.

No seed has been produced on these trees probably owing to the pruning which has been done, and the usual methods of propagation by stem cuttings and root-cuttings have not yet succeeded.

Citrus Plots.

The Orange and mixed Citrus plots have been kept in good condition and the soil has improved considerably following regular digging, manuring and mulching. Banana varieties " Gros Michel " and " Macabou " have been established as an intercrop, the latter variety providing food for stock at the Station.

The best citrus trees are used for providing budwood and grafts, and in addition to the established varieties, Orange " Parson Brown. " " Bowen's Late, " " King " and a Trinidad variety " Luo-gim-gong, " and two Grapefruit, " Connells Prolific, " and Marsh's Seedless " have been introduced for propagation.

Mango Plots.

The varieties of Mango have been used for approach grafting and to provide seedling stocks for nursery work. The varieties are grafted trees and appear to have reached their maximum development being from 15 to 18 feet in height with a circumference of 30 to 40 feet, and are of a convenient size for picking a crop.

Mango " Graham " has been introduced to Reunion during the year and is a valuable addition to these orchard crops.

Cotton.

A plot of Sea Island Cotton was sown to provide seed for distribution to a few planters, who have continued to grow this crop on a small scale.

The plot was arranged to provide information on seed and lint weight of plants when grown singly or with two plants per hole.

The land was flat forked and the seeds were sown in August, 1926, the holes being spaced 4 feet by 2 feet, in two series of ten rows each.

The crop was picked during January and February, 1927, the weight of lint with seed being 47lb. from the one plant per hole plot, and 80lb. from the plot of two plants per hole. The results of experiments in St. Vincent shew a gain of about 20 per cent. yield per acre by the two plants per hole method.

African Oil Palms.

The trees of *Elaeis guineensis*, the African Oil Palm, which were planted at Reuion in 1918 (?) have from time to time produced a few bunches of nuts. A good bunch was obtained from the best tree during February, 1927, following the pruning of the lower leaves, which has been continued since 1925.

The weights of the bunch and nuts were as follows:—

Total weight of bunch and nuts	Weight of nuts with pericarp			
lb.	ozs.	lb.	ozs.	
4	7	2	14	

	lb.	ozs.
Weight of nuts=	2	$2\frac{1}{2}$
Pericarp=		$11\frac{1}{2}$
	2	14

Four plants have been raised from the twelve seeds of the improved variety of oil palm— *Elaeis guineensis, forma dura* "*Deli*" received from Sumatra in January, 1925, through the Royal Botanic Gardens, Kew, and the I mperial Department of Agriculture, Trinidad ; the palms have been planted out and are now from 16 inches to 28 inches in height and are growing slowly.

Slow development appears to be natural to the oil palm during the first three years of growth and the writer has observed a similar development under very favourable conditions in East Africa.

The oil palm requires an abundant rainfall evenly distributed throughout the year, with a soil consisting of a loose loam capable of retaining moisture but allowing free movement of subsoil water. It is similar to the coconut in this respect, but is unlike it in not thriving on the salt coastal flats. The above variety of oil palm is considered an advance on the ordinary form *dura* owing to the thick pericarp which covers the seed, producing nearly double the amount of oil per ton as compared with the ordinary Nigerian fruit. The pericarp of this variety is reported to increase in thickness when the plants are grown in a greater humidity and rainfall.

A consignment of oil palm seed was imported from Trinidad for a local estate during the year, and a few hundred plants have been raised for estate planting. The plants are of the two varieties—"Abe-dam" and "Abe-pa," from seed of trees in Trinidad which were introduced from the Gold Coast in 1913, these varieties are somewhat inferior owing to low yield of palm oil and the thick shells which are produced. There is no doubt that the Oil Palm will grow successfully and form a crop under local conditions, if properly cultivated ; but it is doubtful whether such a crop would be given the constant attention needed to harvest the crop without loss.

A metayer system of employment would be necessary but has its disadvantages, the principal ones being the unskilled labour and the intermittent attention given the primary crop. The local small holder has no interest in oil palms as in West Africa and the East, and would not give the same attention to this crop that he would to a coconut crop with which he is well acquainted.

DEMONSTRATION PLOTS OF GROUND PROVISIONS.

In an attempt to interest the small planters in improved methods of cultivation, a series of plots was arranged to demonstrate the value of good cultivation of Sweet Potatoes, Yams and Cassava.

Sweet Potatoes.

A plot of Sweet Potatoes was arranged to demonstrate the crop returns of two methods of cultivation, viz., (a) Cultivation as practised by the average small planter—this consists of weeding and hoeing, "banking" by pulling the loose soil over the rows of chopped weeds, and planting by the use of cuttings, (b) Improved cultivation—this consists of a deeper tillage by using a light plough, the addition of pen manure at the rate of 12 tons per acre, banking with the plough and fork and planting the banks with cuttings.

Cuttings were planted in (a) and (b) on September 2nd, 1927. and the crop was reaped in January, 1928 ; the yield per plot amply demonstrated the value of improved cultivation, being as follows :—

Plot (a), 537¼lb. of tubers, or 1·91 tons per acre (calculated).
Plot (b), 617½lb. of tubers, or 2·20 tons per acre (calculated)

Yam Plot.

The Lisbon and Horn Yams were grown to demonstrate the value of manures and green dressing in yam cultivations, the experiments being conducted with well rotted pen manure, green dressings of Horse bean and with no manure in the control hills. The experiment is to be repeated during 1928 in order to obtain more reliable data.

Cassava.

An experiment plot of Cassava "Blue Top" has been laid out to demonstrate the crop return under the common banking system, as compared with a well tilled and manured soil. The crop records are not yet available and will be included in a future report.

A full report on the investigation of St. Lucia Cassava Products and their market value in the United Kingdom was published in the Agricultural Report for 1927.

FOREST CONSERVATION.

A large number of Eucalyptus, Casuarina and other useful forest seedlings have been raised from imported seed for estate work, including the provision of windbreaks and for timber supply.

Plants of Eucalyptus and Casuarina have been provided to various Town Wardens for planting on swamp lands and river banks near the towns, in order to reclaim these areas. These plants and others sold from the nurseries have been raised from seed collected at Reunion Experiment Station.

A small amount of revenue obtained from wood-cutting fees has been diverted to the Department for use in raising forest seedlings; these plants will be supplied to Forest Rangers for replanting selected spots.

CONTROL OF INSECT PESTS.

No serious insect pests appeared during the year. Scale insects were well controlled by entomogenous fungi which were aided by the generally wet weather.

The presence of Thrips (*Heliothrips rubrocincta*, Giard.) was evidently affecting Cacao during October, November and December, when continuous wet and cool weather prevented healthy growth, and the trees became more or less dormant.

Bananas infested with banana borer, (*Tomarus bituberculatus* Beaud.) and weevil, (*Cosmopolites sordidus* Germ.) were treated, mainly by the Banana Inspectors, the number of cases treated was 341.

CONTROL OF FUNGUS DISEASES.

Limes.

The most important fungus disease occurring during the year was the appearance of Wither-tip and Blossom blight (*Gloeosporium limetticolum* Clausen.) on limes in March, which was noted in the Report for 1926.

The visit of Professor H. R. Briton Jones, D.Sc., Ph.D. (Lond.), Mycologist of the Imperial College of Tropical Agriculture, took place in March and following the inspection of estates with the Agricultural Superintendent, his report was published as a separate paper for the information of the planters.

Observations on the occurrence of both forms of the disease during the wet year 1927, show that certain estates on the coast with a rainfall of about 70 inches per annum or less can successfully grow limes, and that in normal seasons no withering of leaf buds and tips will take place, and the amount of blossom blight will be negligible. Thus the crop will probably not be affected, or if so, will be thrown back for a matter of two or three weeks.

Estates in regions of higher rainfall have suffered badly, mainly from blossom blight, which has reduced the crop from one half to one third of the normal crop. These estates, mostly in the Soufrière district, will no doubt continue to obtain a crop, dependant upon the weather both as to time and extent of crop. Such estates could make use of the lime budded on sour orange stocks for the drier lands of the estate, until the immune lime can be obtained.

Other estates in the higher areas where rainfall averages about 95 inches per annum, have had no formation of flowers owing to continuous wither-tip. Such estates cannot continue to grow the West Indian lime or even use the lime budded on sour stock, which would under such conditions be continually attacked by blossom blight, if even young shoots succeeded in passing the wither-tip stage. An alternative crop such as coffee or coconuts, with a fruit crop of oranges, grapefruit, or grafted mangoes will be needed to replace the failing lime crop, as at present no immune lime exists which can replace the West Indian lime.

Cacao.

Pod-rots of Cacao and *Rosellinia* root disease were two disturbing factors during the year, the sodden soil and high humidity favouring the progress of the latter, which was again reported from several estates. It is probable that much of the attacks of Thrips which were observed, were but taking advantage of the weakening of the host caused by *Rosellinia.*

Root disease was in most cases too deep seated to allow of remedial methods, and control took the form of preventive treatment by the removal of infected material, provision of adequate isolation, drainage trenches, and pruning of shade trees. In trees lightly attacked or not infected at all, the collar and the junction of the main roots should be exposed and limed to prevent crossing over of the fungus and ringing of the trunk.

Bananas.

Large numbers of bananas were inspected by the Banana Inspectors and other Officers during the year, a total of 211,538 stools being examined, of which 26,365 or 12½ per cent were found diseased and were destroyed, a large number of these plants were in the abandoned cultivation of the Banana Company and were destroyed by the Agricultural Department.

The importance of Gros Michel as a crop practically ceased with the winding up of the local Banana Company, and the experience of the two Inspectors has been made use of provisionally in detecting budrots of Coconuts.

Coconuts.

No marked increases in losses through budrot has been observed, but in view of the growing importance of the coconut plantations, and with the help of the Banana Inspectors more attention has been given to this crop. A systematic survey of all coconuts was commenced at the end of the year in order to establish whether coconut diseases were receiving proper attention, and useful work has already been done in dealing with developing sites of disease ; seventeen cases of budrot were treated during the year.

Sugar-Cane.

The position of Gumming disease of sugar-cane has not changed since last year. No actual gumming of canes has yet been found, but striping of cane leaves is pronounced in varieties B. A. 6032, Sealy Seedling, Ba. 11569, B 149 and in certain Demerara canes ; a cane reputed to be imported from St. Kitts and known locally as the St. Kitts cane, is also very susceptible to leaf-striping. Leaf-striping is well pronounced where soil conditions are bad, and the cane stools under such conditions deteriorate rather rapidly, in several cases seen all the young shoots were striped and dwarfed and produced only poor canes. Such stools should be treated as " rogues" and should be removed and destroyed, and care should be taken that seed cuttings are taken only from healthy plants.

PLANT QUARANTINE

Much work was done in the Fumigatorium during the year in connection with the Plants Protection Ordinance, one hundred and sixteen importations of planting material being received for treatment. Of these, fourteen were prohibited importations of Citrus plants and fruits, and three importations of sugar-cane and grass plants, and these were destroyed under the Ordinance.

The Government may prohibit the importation of any planting material which may be the means of introducing a dangerous disease or pest.

The following prohibitions are in force:—

Coconuts.

(1) Coconuts, coconut plants or any part thereof from all places, except under licence.

Bananas.

(2) Banana plants or any parts thereof that may have come directly or indirectly from Trinidad, Tobago, Grenada, Central and South America.

Cacao.

(3) Cacao plants from South America.

Citrus (Orange, Grapefruit, Limes, etc.)

(4) The importation of all plants of the Citrus family is absolutely prohibited except under licence.

(5) Coffee, Mango, Guava, Sapodilla, and Star apple plants, from the Bahama Islands Ceylon, Cuba, India, Jamaica and the Philippine Islands.

COTTON.

(6) Cotton seed and all parts of the cotton plant are entirely prohibited except under licence, and subject to heat or fumigation treatment on arrival.

SUGAR-CANE, ETC.

(7) All plants of the grass family including Sugar-cane, Sweet Corn, Sorghum, etc. are totally prohibited except under licence.

Exportation of Plant Material

Exporters of fresh fruits, plants and seeds may obtain information on overseas quarantine and certificates when necessary, from the Agricultural Department.

DISEASES AND PESTS WITHIN THE COLONY

Under the Plants Protection Ordinance the existence of the following diseases and pests should be notified to the Agricultural Department:—

Panama disease, Marasmius disease, Banana Weevil and Borer affecting Bananas.
Wither-tip disease of Limes ;
Budrot disease of Coconuts ;
Gumming disease of Sugar-cane ;
Pinkboll worm of Cotton ;

and the occurrence of the parasites Love Vine and Bird Vine.

The Agricultural Officers served notices for the treatment of Bananas attacked by Panama disease, Weevil and Borer, and Budrot of Coconuts.

ANIMAL QUARANTINE.

FARM PRODUCTS.

Under Ordinance No. 17 the Governor in Council may prohibit the importation of animals or farm products which may be a means of introducing disease ; the importation of animals and farm products from the United Kingdom, Isle of Man, and Channel Islands is prohibited ; the importation of animals and farm products from Nevis and Grenada was temporarily prohibited on account of Anthrax.

IMPORTATION OF BEES.

Under Ordinance No. 18 the importation of any queen bee or bee-keeping apparatus if used, is prohibited except under certificate approved by the Agricultural Superintendent to the effect that Foul Brood has not existed in the apiary or in connection therewith.

FARM STOCK.

The Stock of the Department suffered losses during the year, by the death through old age of a draught ox and of the oldest pedigree Poland-China boar, whilst arrangements were being made to dispose of these to local butchers. A donkey was lost through an attack of orchitis, to which disease he had been subject. Thirty-three services were rendered by the pedigree boar at Reunion during 1927, of which only six owners reported to the Department, the total progeny being 13 sows and 19 boars.

INDENTIFICATION AND ANALYSIS.

ANALYSIS OF MOLASSES AND RUM.

Following a report made by one of the principal distilleries on the low return of rum obtained from fermented molasses, samples of rum and molasses were prepared and submitted to the Imperial Commissioner of Agricultural for inspection by the Sugar Technologist.

The samples were as follows:—

Sample 1. Rum showing a turbid precipitate when shaken up with water, and rejected by the Government Spirit Warehouse on account of suspected low wines.
Sample 2. Exhausted vacuum pan molasses.
Sample 3. Vacuum pan molasses with 3rd sugar.

Sample 4. Rum drawn from a cask in bond, giving a precipitation when diluted with water.

The molasses were stated to give a return of 77 per cent. of the normal amount of alcohol, the method of manufacture being as follows: —

Wash set at 16° Brix with exhausted molasses, water and Sulphuric acid, fermentation commenced within four hours, the wash attenuated to 5° Brix in three or four days.

The rum as sampled was stored in oaken casks which were stated to have been first washed out with water, and rinsed with a fraction of rum which was then rejected. Samples of rum drawn direct from the condenser also gave a cloudy precipitate on dilution with water.

The following report has been extracted from the two reports submitted by Professor W. Scott, B.Sc., the Sugar Technologist at the College: —

"There are three well-known causes for a precipitate to occur when rum is diluted.

(a) "The presence of Terpenes extracted by the spirit from the casks.

(b) "The presence of Caramels soluble in strong and insoluble in dilute alcohol.

(c) "The presence of higher fatty acids due to careless distillation, which are precipitated on dilution.

"If the precipitation occurred in rum taken from the condenser (a) and (b) can be eliminated. The drop in the yield of rum indicates either faultly distillation or faultly fermentation. Should careful examination of the still and its operation disclose no defects attention must be concentrated on the fermentation.

"The first remedy I would suggest would be to liquidate the distillery and thoroughly disinfect every vap, pipe and gutter with a 0.75 to 1% solution of Ammonia Fluoride. Any underground pipes or gutters should receive special attention.

"As pure water as possible should be *used* in setting up the wash.

"The addition of some sulphate of ammonia to the wash (about 5-8lb. per 1000 gallons) will be found to speed up fermentation. The quantity of Sulphuric Acid might be increased to as much as one gallon per 1000 gallons of wash in order to prevent or at least delay the growth of bacteria."

"In the absence of Ammonia Fluoride, Milk of Lime can be used to a certain extent in disinfecting vats, gutter, etc., although the efficiency of this treatment cannot be guaranteed."

EXAMINATION OF SAMPLES OF MOLASSES AND RUM RECEIVED FROM THE AGRICULTURAL SUPERINTENDENT, ST. LUCIA.

I. MOLASSES.

Analysis.

	Vacuum Pan Molasses (Exhausted) Sample No. 2	Vacuum Pan Molasses (with 3rd Sugar) Sample No. 3
Brix ...	81.75	83.38
Sucrose (Clerget) % ...	18.38	33.26
Glucose % ...	34.70	31.47
Gravity purity ...	22.50	39.90

"Both samples showed evidence of fermentation when the bottles were opened. (2) Sample seems to have undergone fermentation in storage, and cannot be expected to give a satisfactory attenuation in the distillery. Wash (16° Brix) was set up in the Laboratory with portions of each sample, and normal quantities of Sulphate of Ammonia and Sulphuric Acid were added. (2) Sample gave a very poor attenuation while the attenuation from (3) was fairly satisfactory.

"The rum obtained on distillation was found to give a fluorescent, cloudy precipitate on dilution similar to that produced by the Rum Samples (1) and (4).

"Wash was set up under similar conditions from Trinidad molasses, which on distillation gave Rum free from this defect. The St. Lucia samples was sterilized by heating to boiling point, and the wash set up from the sterilized molasses were pitched from actively fermenting Trinidad molasses. The Rum obtained gave no precipitate or cloudiness on dilution.

"The organism responsible for the faulty Rum is therefore not merely developed during the process of fermentation, but is present in the molasses in storage. It can be destroyed by heating the molasses to boiling temperature,

"I would suggest to the St. Lucia factories concerned to take their molasses back in the vacuum pans, or other suitable heating apparatus, to be heated to a temperature approaching the boiling point. The molasses could then be stored in a freshly disinfected tank, or one washed with boiling water. Probably the most satisfactory procedure in the distillery would be to set up the initial wash with a few casks of Trinidad molasses free from the organism referred to above; and then to pitch each fresh vat set up from an actively fermenting vat as suggested by Dr. Briton Jones.

"Thorough cleanliness should be observed in the distillery, but I cannot give hopes of satisfactory attenuations until fresh molasses of better quality becomes available.

II. Rum.

"Two pint samples of Rum were received, Sample (1) and Sample (4).

"Both samples gave a fluorescent cloudiness on dilution the effect being more marked in sample (4).

"The samples were subjected to fractional distillation and the distillates diluted with water to three times their original volume with the following results.

Fraction °C.	79°—80°	80°—87°	87°—90°	90°—94°	94°—97°	above 97°
Sample (4)	Clear	Cloudy fluorescent	Clear	Clear	Clear	Clear
Sample (1)	do.	do.	Slight cloudiness	do.	do.	do.

"By separating the fractions at closer intervals, it was found that the bulk of the cloudy portion distilled over between 80°—84° C. The precipitate (or cloudiness) obtained on dilution did not settle. and passed through the finest filter paper used.

"Very large samples would be required to allow a sufficient amount of the precipitate to be obtained for indentification.

"Any faulty Rum in storage in St. Lucia could be rectified by distillation, provided the fraction between 80°—84° C. is separated from the remainder of the distillate."

(Sgd) W. SCOTT,
Sugar Technologist.

EXAMINATION OF RAW LIME JUICE.

Samples of raw lime juice were prepared and submitted to the Commissioner of Agriculture, Imperial College of Tropical Agriculture, Trinidad, in order to determine the cause of discolouration of the lime juice when stored. The Professor of Chemistry, F. Hardy, M.A., Dip. Agr., made the following report on the samples : —

REPORT ON SAMPLES.

"The samples (10 in number,) are stated to be similar to the products purchased from Lime Estates in St. Lucia, and to represent juice exhibiting serious discolouration on storing.

"The appearance of the samples was similar in each case :—pale brown colour, with a little brown sediment. It is similar to that of almost any grade of raw lime-juice that has been exposed to air for some time without disturbance.

"I am of opinion that the discolouration is due to oxidation of the colouring matter of lime-rind which always gains access to juice obtained by roller-mill expression, and in amount probably varying with the degree of expression practised.

"The degree of discolouring of stored lime-juice depends on length of time of exposure to atmospheric oxygen and, presumably, on total colouring-matter content, which in turn depends probably on composition of the limes, and on the degree of mill expression.

"The samples were compared with fresh hand-expressed Trinidad lime-juice (somewhat under-ripe) by adding to equal volumes of each, the same number of drops of dilute ferric chloride solution. This substance reacts with the colouring-matter, to give a deep sepia-brown colouration. The test proved that the samples submitted each contained approximately the same amount of colouring matter, and that each contained about four and a half ($4\frac{1}{2}$) times as much colouring matter as the hand-expressed fresh Trinidad juice.

"This result suggests either that :—

(a) the limes used in St. Lucia were different in composition from the Trinidad limes used for purposes of comparison. It is suggested that the St. Lucia limes were over-ripe. This point should be investigated in St. Lucia. Or

(b) the limes were subjected to too high a pressure in the mills.

(Investigation on the spot alone could settle these, and similar, questions).

"*Oxidation.* I am still doubtful whether or not the exported lime juice is not exposed too freely or too long to the air. I have already mentioned (in another communication) that (i) a covering of pulp scum, (ii) complete filling of casks, (iii) the presence of adequate essential oil content, and (iv) rapidity in handling and transporting, will aid in minimising discolouration due to oxidation of lime colouring matter.

"Furthermore, the presence of even small traces of *iron*, derived from iron rollers, etc., greatly enhances the brown discolouration of lime-juice, and should be carefully prevented.

"The samples contained the following amounts of citric acid, in ounces per gallon :—

No. 92	... 12.7	No. 225	... 13.9
No. 92A	... 12.8	No. 225A	... 12.6
No. 119	... 13.1	A	... 13.2
No. 119A	... 13.6	B	... 12.8
No. 172	... 13.3	Fresh Trinidad Lime	
No. 172A	... 13.0	Juice (under ripe)	... 9.3

"They are of average acid content, and show no abnormalities in this respect.

"Laboratory trials have demonstrated that the pale brown colouring matter of the samples can be removed nearly completely by filtering cold through "Filter-cell" or better, through a mixture of "Filter-cell" and "Norit" (a vegetable decolourizing carbon.) This treatment, however, may also remove essential-oil flavouring matter, and may not therefore be permissible on a large scale.

"I wish, in conclusion, to reiterate that little knowledge can be gained of the causes and possible prevention of discolouration of stored-lime-juice *without investigations being made on the spot.* Laboratory examination alone is unsatisfactory, and I feel that what I have written on the subject is merely suggestive, and may be far wide of the actual truth"

(Sgd) F. HARDY,
Professor of Chemistry.

Identification of plants and examination of plant products was made on material submitted during the year, samples of dried banana chips were made successfully, and dried Figs of Gros Michel and Short Fig were attempted but were not successful, most of the fruit being attacked by moulds before drying was completed.

The successful utilisation of bananas as banana chips and as banana figs requires proper drying apparatus in order to prevent waste, and the marketing of these products must be better understood before a trade can be developed.

(The following note on suggestions for improving Cacao may be useful to Cacao growers in St. Lucia.)

VISIT OF AGRICULTURAL SUPERINTENDENT TO CADBURY BROS., LTD., BOURNVILLE.

The Agricultural Superintendent visited the works of Messrs. Cadbury Bros., Bournville, on two occasions whilst on leave, and had interviews with the Chief Chemist and the Buyer with regard to the quality of St. Lucia Cacao and means for improving it.

Samples of beans were examined from various cacao-producing countries and prepared with the local grades then in stock ; the following comments are made from the Buyer's point of view, on three named St. Lucia samples.

Sample (1) Beans mouldy, of a fair size and uniform in grade, apparently allowed to become damp after curing, otherwise a good sample.

Sample (2) Small beans, irregular in size and fermentation, a low grade consignment, probably from pods of different ages and varieties.

Sample (3) Polished, dark, uniform beans; a very good sample.

The Chemist and the Buyer stated that St. Lucia Cacao had improved considerably during the last few years, the principal defect was insufficient or irregular fermentation, this could be avoided by better selection of *ripe* pods and allowing a sufficient time for fermentation according to weather and bulk of beans.

The chief points to which the producers should give attention are : —

1. Improved selection of pods, to give a uniform type of bean.
2. Improved fermentation and drying (this should be helped by attention to (1)).
3. Polishing is unnecessary in a well prepared bean. Polishing is thought by some buyers to conceal defects of preparation.
4. *Clayed* beans and unfermented beans are not wanted.
5. Care should be taken to prevent strong smelling substances coming in contact with cacao, as the beans take up odours readily ; copra, and coconut oil, oil from turpentines, etc., permanently affect the cacao bean and cause much trouble in the factory.
6. The best cacao reaches the market during the period October to March.
7. The ideal West Indian bean is of a good uniform size, well fermented and well dried, with a full and sweet odour; it breaks with a crisp snap. Such a sample can be seen at the office of the Agricultural Superintendent, Castries.

West Indian beans, particularly the Grenada type, are used to impart flavour and quality to the bulk of medium grade West African cacao. It is, therefore, obvious that only the best uniform beans are really necessary from the manufacturer's point of view.

The Agricultural Superintendent was assured that the Brokers would be asked to pay more attention to St. Lucia Cacao, and if found to be of a good average grade, such cacao would be bought in larger amounts. The absence of an inspection and grading service supported by the cacao growers, entails individual examination of every small consignment received on the market and is a serious hindrance to the buying agents.

The Chemist will be glad to examine and report on samples of cacao if sent through the Agricultural Department.

The Agricultural Superintendent gratefully acknowledges the valuable advice and assistance of the Buyer, Mr. Strickland, and of the Chemist, Mr. A. W. Knapp, B.Sc., F.I.C., and highly appreciates the courtesy of Cadbury Bros. in providing a special attendant during the tour through this remarkable institution and the Bournville estate.

PROGRESS IN THE CHIEF INDUSTRIES

SUGAR

The unusually wet weather which prevailed throughout the year 1927, seriously hindered the reaping of the cane crop, and reduced the density of the juice.

The total output of Sugar was 5,364 tons and was lower by 657 tons than the crop of the previous year ; one factory did not complete the crop owing to financial difficulties and a general rearrangement of management of the factories was taking place at the end of the year.

The markets for Sugar were generally favourable, averaging about £17 per ton f.o.b. as against £14 per ton during 1926, and the value of the exported products shows an increase.

The production of Fancy Molasses has slightly fallen off, the quantity exported was 156,050 gallons.

The following figures show the quantity and value of Sugar products exported during 1926 and 1927—

	1926.	Value.	1927.	Value.
Usine Sugar (tons) ...	4,757	£65,444	4,432	£74,200
Muscovado sugar (tons) ...	456	5,414	178	2,235
Molasses & Syrup (gallons) ...	156,424	8,659	156,050	7,634
		£79,517		£84,069

An encouraging aspect of the local Sugar industry is the tendency to co-operate, which, if carried into effect should reduce over-head charges and should increase efficiency.

The assistance of the Agricultural Department has already been more fully utilised than in previous years, and new and improved varieties of canes have been introduced.

RUM.

The gross quantity of Rum manufactured at the licensed distilleries was 41,960 proof gallons, as against 34,161 proof gallons made in 1926, of this amount 866 gallons were returned to the distilleries for rectification. The amount exported during the year was 1,700 gallons, valued at £212. Efforts have been made to improve the quality of Rum produced, but the sale of Rum is seriously hampered by the amount of crude spirits made in illicit stills.

CACAO.

More attention has been paid to the cultivation, and also to the preparation of the beans for market. Prices have been satisfactory, ranging from about 65/- for the beginning of the year to about 80/- later on, and have kept practically steady at the latter price. The quality has also received favourable comment in the London market and this should encourage planters to continue to improve their quality of beans.

A good crop was reaped, the exported amount showing an advance of 2,146 cwt.

The exports of Cacao were as follows :—

1926 ...	10,037 cwt.	valued at	£22,454
1927 ...	12,183 cwt.	„	£30,560

LIMES.

The Lime industry has received a serious check by the occurrence of Wither tip disease on lime estates generally throughout the Island. Estates in wet districts have suffered serious losses through failure of the crop, whilst estates in the drier areas have lost but a small amount, unfortunately the latter are few. Efforts are being made to reduce losses from disease, by pruning the shade trees and opening the lime trees to sun and air ; with more attention to soil conditions, and the propagation of immune limes, and of limes budded on sour orange stock.

The abnormally wet season was entirely in favour of the disease and there is no doubt that in a normal season and with good farming, the drier estates will continue to grow a sucessful lime crop.

The loss of crop through disease has been previously estimated at 40 per cent., it is probably somewhat less than this, probably 32 per cent. The full effect of this loss will be seen in the exported lime products for 1928, since the exported production for 1927 contains a portion of the crop for 1926, and shows a slight, but not serious reduction of 467 barrels, or 0.8 per cent. The crop calculated as barrels of fruit was :—

1926	59,415	barrels, valued as exported lime produce	£30,243
1927	58.948	,, ,, ,, ,,	£27,421

Lime oils continued to realise high prices during the year ranging from 27/- to 37/- per lb. for Handpress oil and 21/- to 28/- for Distilled oil. Prices decreased towards the close of the year. The Concentrated and Raw juice markets were not active.

COCONUTS.

This industry is steadily increasing in importance. New groves are commencing to crop and large areas are being planted, chiefly on the Windward coast. The older plantations are doing well generally and contain some very fine trees.

The Oil Mills have not operated continuously owing to difficulties in disposing of the Coconut Oil, although this is of a superior quality. Soap has been made successfully, and with persistent effort and standardised brands, it should be possible to create a firm demand for the domestic and toilet soaps, which contain the natural glycerine and are of good quality.

The following Coconut products have been exported in addition to local consumption :—

	1926.	Value. £	1927.	Value. £
Coconuts (number) ...	118,501	381	96,813	351
Coconut Oil (gall.) ...	19,081	3,847	3,921	735
Copra (lb.)	178,192	1,808	449,191	4,409
Coconut Meal (lb.) ...	94,080	778	15,680	88
Total ..		£6,814		£5,583

BANANAS.

This industry after beginning to assume great importance has practically come to an end following the failure of the local Banana Company. The production for export rose from 4,190 bunches in 1924 to 42,209 bunches in 1926, and, during the first 3 months of 1927, 15,175 bunches were shipped, and this number would have become the monthly export supply. The sudden termination of export facilities has caused serious losses among large and small planters, particularly the latter. An effort was made to ship bananas to New York in ventilated holds but this was not successful, the fruit being largely decayed on arrival.

The best of the banana lands are being turned into cane cultivation.

PROGRESS IN MINOR INDUSTRIES.

BAY OIL AND BAY RUM.

The market for Bay Oil improved during the year and the Factories were working steadily. Bay Rum is being manufactured on a larger scale and is finding a steady market in some of the neighbouring islands. 12,884 gallons of Bay Rum, and 1,908lb. of Bay Oil have been exported during the year.

GROUND PROVISIONS.

Increased attention is being given to the production of ground provisions and other minor crops ; and there has been no scarcity of provisions at any period of the year.

Nutmeg cultivation is receiving attention on some estates, and in districts where Wither-tip has seriously affected the lime fields, Nutmegs and Coffee are being planted as alternative crops.

From an Agricultural point of view the year 1927 was unfavourable in many respects. The loss of the Banana industry, and the appearance of Wither-tip disease in the Lime cultivations, seriously prejudiced agricultural development and the revenue derived therefrom. In addition, many of the principal buildings in the Town of Castries, were destroyed by a disastrous fire in May, 1927.

By the aid of loans and a grant and through private endeavour, the business quarter of the town is now being restored.

On the other hand there have been several factors in favour of the planter. The market prices of the principal products—Sugar, Cacao, Lime Oils and Copra, have been good and constant. There is an attempt at developing new industries such as Coffee, Nutmeg, Pine-apples and Onions. More attention is being paid to proper cultural methods, and the Small Planters' Associations having co-operated in connection with banana growing, should find no difficulty in co-operating to produce other crops for local and overseas markets.

The total value of the exported agricultural products was £162,883, as against £160,029 for the preceding year.

An interesting development at the end of the year and one likely to have far reaching effects, was the proposal received from the Canadian Government Merchant Marine Shipping Line for the development of a fresh fruit and vegetable trade with Canada. It is hoped that definite results will accrue from the investigation being undertaken by the Imperial Deparment of Agriculture with local departments. Information is needed on the kinds of produce demanded by the Canadian consumer, and much work will be necessary in developing supplies and in instructing growers and shippers in the methods of selecting, grading and preparing the produce for shipment and market.

EXPORTS FROM ST. LUCIA.

		1926	Value £		1927	Value £
Sugar Products:—						
Sugar, Vacuum Pan	... Tons	4,757	65,444	Tons	4,432	74,200
,, Muscovado	... ,,	456	5,414	,,	178	2,235
Molasses and Syrup	... Gall.	156,424	8,659	Gall.	156,050	7,634
Rum ...	... p. Gls.	37	11	p. Gall.	1,700	212
Cacao Products:—						
Cacao ...	... Cwt.	10,037	22,454	Cwt.	12,183	30,560
Lime Products:—						
Concentrated Lime Juice	... Gall.	35,234	7,856	Gall.	38,064	8,783
Raw Lime Juice	... ,,	43,893	2,121	,,	17,509	967
Distilled Lime Oil	... ,,	1,084	9,182	,,	995	9,904
Essential H.P. Otto of Limes	,.	577	6,261	,,	379	5,366
Green Limes ...	... Barrels	2,810	2,720	Barrels	2,070	2,317
Lime Seeds ...	... Lb.	34,602	106	Lb.	25,847	89
Coconut Products:—						
Coconuts ...	... Number	118,501	381	Number	96,813	351
Copra ...	... Lb.	178,192	1,808	Lb.	449,191	4,409
Coconut-meal ...	... ,,	94,080	778	,,	15,680	88
Coconut Oil ...	... Gall.	19,081	3,847	Gall.	3,921	735

EXPORTS—(*Contd.*)

HONEY PRODUCTS :—						
Honey ...	... Lb.	129,152	737	Lb.	37,339	410
Beeswax ...	... ,,	217	9	,,	676	24
COTTON PRODUCTS :—						
Sea Island Lint	... ,,	1,618	161	Lb.	923	82
BAY PRODUCTS :—						
Bay Oil (9lb. per gall.)	... ,,	2,232	680	,,	1,908	508
Bay Rum ...	... Gall.	14,062	2,519	Gall.	12.884	2,112
BANANA PRODUCTS :—						
Bananas ...	... Bunches	46,209	4,356	Bunches	27,052	2,351
SPICES :—						
Nutmegs ...	... Lb.	6,396	327	Lb.	9,793	380
Mace ...	... ,,	1,305	145	,,	2,133	288
Miscellaneous Spices	...	...	66		...	153
FRESH FRUITS :—						
Oranges ...	... Number	73,892	79	Number	13,140	31
Mangoes ...	... ,,	...	1,559		...	594
Miscellaneous fruit	...	...	2,278		...	2.051
FOREST PRODUCTS :—						
Logwood ...	... Tons	1,507	4,986	Tons	640	2,027
Charcoal ...	... Bags	32,390	2,359	Bags	38,205	1,819
Miscellaneous Forest Products		...	900		...	870
MISCELLANEOUS PRODUCTS :—		...	1.826		...	1,333
			£160.029			£162,883

AGRICULTURAL INSTRUCTION IN THE PRIMARY SCHOOLS.

REPORT OF THE AGRICULTURAL SUPERINTENDENT ON THE TEACHING OF AGRICULTURE IN THE PRIMARY SCHOOLS OF ST. LUCIA DURING 1927.

The year 1927 was the nineteenth year of teaching and examination of Schools in Agriculture conducted by the Agricultural Department. The examination took place during the period October 24th, to December 9th, and was conducted by the Assistant Agricultural Superintendent. Seventeen schools were examined as in 1926, but the agricultural pupils numbered 351 as against 342, an increase of 9 on the previous year.

Sixteen girls were included in the classes for the year, 9 of which came from one school—Babonneau. Many more girls should be induced to join the agricultural classes in order to prepare themselves for an agricultural livelihood later on, since the majority of girls find work on estates and small holdings, but owing to lack of training female labour is largely unskilled and receives but a low wage. In the absence of general classes in domestic economy, the classes in agriculture if properly attended provide a means for improving the status of the girl-employees or small-holders, as well as providing a future for the boys as planters.

Most schools conduct a fair amount of budding and grafting of economic plants and are becoming proficient in this practical work, but only a few schools distribute the propagated plants to pupils for cultivation at their homes. It would act as an incentive to the pupils if they were given the plants propagated in the school gardens, so that they might cultivate them at home and report results to the Teacher, for entry in the note book.

The Agricultural Department distributed free onion seeds to School Gardens for culture experiments. Any surplus of these seeds should be given to pupils for cultivation in their home gardens and to report any results so obtained.

Manuring and the rearrangement of garden plots still received too little attention and the Teachers should endeavour to plan their work so as to include these two very necessary operations.

In future, more stress will be laid on improving the pupil's knowledge of the cultivation of commercial crops as grown in each district, and Teachers should arrange to visit suitable cultivations with the class in order to study and develop observation of the more important crops.

The general standard of agricultural knowledge and practice is a decided improvement on recent years.

EXAMINER'S REPORT.

Castries Anglican Juvenile.

Both boys and girls have taken a keen interest in the practical work carried on in this school garden, which includes the propagation and cultivation of vegetables throughout the year, and of economic plants by budding, grafting and circumposition. The theoretical knowledge was good, and the quality of work as a whole reflects creditably on both Teachers and pupils.

Castries R.C. Boys'

This school as usual presented the largest agricultural class, and the majority of the pupils were very keen. The theoretical knowledge was good and the practical demonstrations included a few experiments well arranged and thoroughly worked out. The fruit trees in the various corners of the yard are receiving proper attention.

Riviere Doree Juvenile.

Useful work continues to be done at this school and though situated in a some what dry district it is now one of the best country school gardens. Budding and grafting of economic plants form a large part of the practical work. The experimental work such as staking and non-staking of yams, manuring and non-manuring of English vegetables, showed useful results.

Castries Wesleyan.

Increased attention has been given to the propagation of plants by grafting and budding, simple experiments with various crops were arranged and worked out with useful results. The theoretical knowledge was good. This garden should now be flat forked, a new supply of soil added and the garden rearranged into beds.

Micoud R.C. Juvenile.

This garden plot is very sandy, but good work has been done by working in large quantities of stable manure, and the results of manurial experiments are well marked in this type of soil. Budding and grafting have received proper attention, and successful bottle grafting has been carried out with several plants including the papaw. The theoretical knowledge was good.

Dennery R.C. Boys'.

The theoretical knowledge was good, but although a great deal of practical work had been done during the year, enough simple and useful experiments with the plants grown had not been carried out, and when this happens the boys are liable to lose interest in the work. The practical work included budding and grafting.

Soufriere R.C. Boys'.

The theoretical knowledge at this school was good and the pupils seem to be taking more interest in the practical work. Budding and grafting have received attention but should be done on a larger scale, more experiments should also be arranged. The plot might be enlarged to include a small orchard of choice fruit trees, which could be obtained in the district if sought for. Propagation of plants so obtained would thus help to demonstrate the value of good fruit trees, to which this district is well suited.

Saltibus R.C. Juvenile.

This school has formed a new garden on a site near the schoolmaster's quarters and this is well planned and cultivated. The practical work included several experiments with vegetables among which the value of staking yams was clearly demonstrated with several varieties. The girls of this school take a keen interest in agriculture and have an ornamental section which has been kept in good order.

Choiseul R.C. Boys'

The theoretical knowledge at this school was fair. The practical work included budding and grafting of economic plants on a fairly large scale. These plants as ready should be distributed to the pupils of the Agricultural class for growing at home and results should be reported to the

Teacher from time to time, at present they are allowed to remain in the beds too long. Onion growing should be included in the practical work with a view to stimulating local interest in the onion industry. Each pupil should be given a few seedlings to raise at home in boxes or beds and thus interest their parents to plant for themselves.

LABORIE R.C. BOYS'

Green dressings have improved the soil of this garden but in addition large applications of pen manure are still necessary, the soil being heavy and subject to drought. Useful experiments have been arranged and carried out, and the results of the few manurial experiments clearly show the poorness of the soil. Budding and grafting have received attention and the plants raised have been distributed to the pupils of the agricultural class, this should encourage them to take a greater interest in the work. The theoretical knowledge was good.

CANARIES R.C. BOYS'.

The agricultural work at this school has made marked improvement. A proper note book was kept and helped considerably in showing the rotation of work throughout the year. The garden is large and well adapted for experimental work with vegetables suitable to the district, some of which are well cultivated and provide useful object lessons.

The arrangement of vegetable plots should be more carefully studied and unsuitable mixtures should be avoided.

The agricultural class included four girls, and it is hoped that other schools will follow this useful development.

LARESSOURCE R.C. JUVENILE.

This school has a large garden plot worked by both the boys and girls forming the agricultural class The beds were cropped with a variety of useful vegetables and the experiments were simple and the results were useful. Both budding and grafting received proper attention and at the time of examination a number of budded oranges and grafted mangoes were ready for distribution. These should be given to the pupils of the agricultural class and thus help to establish fruit trees of good quality in the district.

ANSE-LA-RAYE R.C. JUVENILE.

The theoretical knowledge at this school was fair and though the garden has been washed out by floods more than once during the year, useful work has been done, particularly the propagation of economic plants such as oranges, mangoes and figs. Bamboo hedges should be planted along the river bank to protect the garden from floods, and the lands between the present garden and the school should be planned out and planted up in fruit trees and ornamental shrubs.

FORESTIERE WESLEYAN.

The agricultural class at this school includes both boys and girls, but the class is small; the practical work is performed by the majority of children in the school whether strictly in the class or not. The waste land around the school which has been in bush for years is gradually being cleaned up and converted into a useful garden carrying good crops. The practical work included the growing of English and other vegetables.

BABONNEAU R.C. JUVENILE.

The agricultural work has not been quite up to the standard at this school, though the school is favoured by having a large plot well suited for the cultivation of vegetables as grown locally by small holders. Onions should be included as an important crop for the practical work, the cultivation of which would be instructive and helpful to both pupils and also the small holders, the soil of this district being well suited for the onion industry. Budding and grafting should receive more attention and the plants so raised should be distributed to the pupils. Girls are included in the class and are as apt as the boys in garden operations.

VIEUX-FORT R.C. BOYS'.

The hedge around this garden requires constant attention to enable it to protect the garden from heavy winds, and pigeon peas could be grown with great advantage through the garden, dividing it into small sheltered plots; also liberal applications of pen manure are necessary to help to retain moisture, and to increase fertility. Budding and grafting have received attention, but still more propagation of fruit trees should be attempted.

Experiments with Sea Island cotton, ground-nuts and other crops showed useful results.

MON REPOS R.C. JUVENILE.

Compared with other school gardens, not very much work has been done at this school during the year. The note book does not show continuous work.

The garden plot should be manured and flat forked, and the beds rearranged before new work is attempted. The old economic plants on hand as stock for budding and grafting should be dug out and burnt and replaced with young and vigorous plants.

List of Marks and Standing of Schools in Agricultural Teaching.

Schools.	No. of Pupils Examined.	Condition and use made of garden.	Practical work and knowledge.	Theoretical Knowledge	Total.	Percentage.	Result Note.
Possible Marks	—	10	10	10	30	100	–
Castries Anglican Juvenile	35	10	10	9	29	96·6	E.
Castries R.C. Boys'	62	9	9	10	28	93·3	E.
Riviere Dorée Juvenile	8	10	9	8	27	90	E.
Castries Wesleyan	23	8	9	10	27	90	E.
Micoud R.C. Juvenile	10	8	9	10	27	90	E.
Dennery R.C. Boys'	17	8	9	9	26	86·6	V.G.
Soufrière R.C. Boys'	45	8	8	10	26	86·6	V.G.
Saltibus R.C. Juvenile	8	9	8	8	25	83·3	V.G.
Choiseul R.C. Boys'	28	9	8	7	24	80	V.G.
Laborie R.C. Boys'	28	8	7	9	24	80	V.G.
Canaries R.C. Juvenile (a)	16	8	8	6	24	80	V.G.
La Ressource R.C. Juvenile (b) ...	8	9	8	6	23	76·6	V.G.
Anse-la-Raye R.C. Juvenile	8	8	8	7	23	76·6	V.G.
Forestiere Wesleyan (c)	4	8	8	7	23	76·6	V.G.
Babonneau R.C. Juvenile (d)	17	7	8	8	23	76·6	V.G.
Vieux-Fort R.C. Boys'	28	7	7	8	22	73·3	G.
Mon Repos R.C. Juvenile	6	7	6	6	19	63·3	G.

R. W NILES. *Examiner.*
21/2/1928.

(a) Including 4 girls. (b) Including 2 girls. (c) Including 1 girl. (d) Including 9 girls.

EXAMINATION OF CERTIFICATE TEACHERS IN AGRICULTURE.

The Annual examination of Certificate Teachers in Agriculture was conducted by the Agricultural Department during December.

Nine Candidates took papers in agriculture and the results are encouraging, as 66 per cent. obtained half-marks and over.

The three candidates who did not obtain half-marks, failed because of their inability to answer simple questions in a simple manner. Elementary knowledge should not be set aside on examination day.

The schedule of marks awarded is attached.

CERTIFICATE TEACHERS' EXAMINATION, YEAR 1927.

Agriculture.

Name.	School.	Max. Marks 100.
Charles Antoine ...	Canaries R.C Juvenile	64
Peter Joseph	Choiseul R.C. Boys'	53
Jn. Baptiste Frederick ...	Castries R.C. Boys'	52
P. Alphonse	Laborie R.C. Boys'	52
Filbert Cyril	Do. do.	52
G. Lafargue	—	50
Simon Noel	Laborie R.C. Boys'	44
C. O. Annibaffa ...	—	40
G. I. Castang	Castries R.C. Boys'	36

(Sgd.) R. W. NILES.
Examiner.
27/3/1928.

LECTURES TO TEACHERS.

In the absence of the Agricultural Superintendent on leave, the Assistant Agricultural Superintendent conducted the annual Lectures in Agriculture to Head Teachers and Assistant Teachers of Primary Schools from August 8th to 12th inclusive.

One day was set aside for lectures on Sanitation and these were conducted by the Chief Sanitary Inspector.

The subjects taken in Agriculture were :—

(1) Plant propagation, with special reference to the production of plants suitable for the establishment of a fruit industry.
(2) Manures and manuring.
(3) School Gardening.
(4) Lime cultivation—Anthracnose of Limes, Wither-tip, Blossom blight, Fruit Canker.
(5) Acids, Bases, and Salts, in common use—and their relation to soil and cultivation.
(6) A few Common Insect Pests of garden plants and their treatment and control.

Attendance.—Forty-three teachers and twelve visitors attended Lectures.

LESSONS TO PUPILS OF PRIMARY SCHOOLS.

The Agricultural Officers inspected School Gardens and gave instruction in the Schools during the year.

AGRICULTURAL WORK AND INSTRUCTION IN THE COUNTRY DISTRICTS.

Frequent visits were made by the Agricultural Officers to large estates, small holdings and gardens throughout the Colony during the year, advice was given and where necessary reports were made on these visits. The Agricultural Officers desire to express their sincere appreciation of the hospitality and facilities afforded them whilst on travelling duty, by all sections of the planting community.

The Small Planter's Association has become a recognised body representing the smaller estates and holdings and will be of great value in promoting the prospective fruit industry, as mentioned elsewhere.

REPORT ON THE WORKING OF AGRICULURAL CREDIT SOCIETIES.

The collection of loans from members of Agricultural Credit Societies, and the winding up of Societies whenever these have paid off their loans, continued during the year, and is the only work which can now be done in connection with this scheme. The amount collected during the year was £92 10 8 as against £59 17 10 in the previous year. This is no cause for congratulation, however, for the continued existence of these Societies entails a cumulative debt, by the growth of interest remaining unpaid year after year. For instance—Dennery Agricultural Credit Society neglected to pay interest during 1927, and its debt now stands at £165 17 0 instead of £154 16 6 as at the beginning of the year. There is, of course, no investment of loans which might perform useful work and thus relieve the debt.

It is inevitable that the efforts made to collect loans and to wind up these Societies, should hinder good relations between the Officers of the Agricultural Department and certain sections of the community.

For the good of all concerned one of two courses should be taken at the earliest opportunity :—

(*a*) The existence of the Societies should be terminated, by the legal enforcement of the notice already given that the landed properties of debtors will be sold to redeem debts, or

(*b*) Amortisation, *i.e.*, The amount of £809 due to Barclays Bank should be settled by the Government and re-collected from general revenue.

For the past five years neither Trustees nor Members of certain societies have made any effort to reduce loans or even to attend meetings, and even though a system of easy monthly payments has been arranged very little money has been paid in.

The following Report is submitted by the Inspector, Mr. R. W. Niles :—

I have the honour to submit the twelfth Report on the Working of Agricultural Credit Societies of St. Lucia for the period January 1st to December 31st, 1927.

Of the ten Societies originally formed six are still working and at the beginning of the year owed Barclays Bank £901 14 10½. During the year the Societies repaid £92 10 8, leaving a balance of £809 4 2½ unpaid at the close of the year.

The Good Shepherd and Castries Agricultural Credit Societies were dissolved some time ago. Vieux-Fort Society was dissolved during the year, and Gros-Islet Society has repaid all advances and will be dissolved as soon as the accounts have been audited.

A detailed report on the working of each Society is attached :—

DENNERY.

This Society consists of 76 members. On January 1st, the members owed Barclays Bank £154 16 6. During the year they paid nothing towards the reduction of their advances, and also left unpaid interest amounting to £11 0 6, consequently on December 31st, their indebtedness had increased to £165 17 0.

MICOUD.

This Society consists of 56 members. On January 1st they owed Barclays Bank £98 2 7½. During the year they made a feeble effort and repaid £12 2 11 advances beside interest, leaving a debt of £85 19 8½ unpaid on December 31st.

SOUFRIERE.

This Society consists of 69 members and very little effort is being made to reduce the large debt they still owe. On January 1st the members owed Barclays Bank £244 8 3½. During the year they paid interest and £6 16 5½ towards their advances, leaving a debt of £237 11 10 unpaid at the end of the year.

CHOISEUL.

This Society consists of 34 members. At the beginning of the year the members owed Barclays Bank £110 4 1½. During the year they repaid £17 3 0½, leaving a debt of £93 1 1 unpaid on December 31st.

LABORIE.

This Society consists of 61 members. On January 1st members owed Barclays Bank £94 6 9½. During the year they repaid £19 15 8, leaving a balance of £74 11 1½ unpaid at the end of the year.

VIEUX-FORT.

This Society paid off all advances and was dissolved on December 16th, 1927.

GROS-ISLET,

This Society paid off all advances during the year, and will be dissolved as soon as the accounts are audited.

ANSE-LA-RAYE.

This Society consists of 40 members. During the year £47 12 1 was paid on account of a debt of £199 16 6½, leaving a balance of £152 4 5½ unpaid on December 31st.

General Remarks.

The working of these Societies becomes more difficult every year on account of the members avoiding the Inspector by refusing to attend meetings, and by the Trustees taking little interest in trying to collect the advances.

Unless the Trustees do their duty by convening meetings often, so that the Inspector can meet the members, and by compelling members who owe, to attend, or collect their advances through the Court if they refuse, it will be very difficult to collect this large outstanding amount without selling up members' properties.

I beg to thank the various Parish Priests and Secretaries of the Societies for the assistance they have given in connection with my inspection of the Societies.

Appended are :—

A. Statement of Loan Account of the Societies.

B. Balance Sheet of Soufrière, Laborie, Anse-la-Raye, Vieux-Fort, Micoud and Choiseul

APPENDIX A.

Loan Account.

Name of Society.	Membership.	Amount of Loan 31.12.27.	Amount paid during 1927.	Amount owing 31.12.27.	Remarks.
		£ s. d.	£ s. d.	£ s. d.	
Dennery (*a*) ...	76	154 16 6	...	165 17 0	Rate of Interest—7%.
Micoud ..	56	98 2 7½	12 2 11	85 19 8½	
Soufrière ...	69	244 8 3½	6 16 5½	237 11 10	Loans overdue.
Choiseul ...	34	110 4 1½	17 3 0½	93 1 1	
Laborie ...	61	94 6 9½	19 15 8	74 11 1½	Loans due to Barclays
Anse-la-Raye ...	40	199 16 6½	47 12 1	152 4 5½	Bank.
		901 14 10½	103 10 2	809 5 2½	

(*a*) £11 0 6 interest not paid.

APPENDIX B.

SOUFRIERE AGRICULTURAL CREDIT SOCIETY.

Balance Sheet at 30.6.27.

	Dr. £ s. d.	*Cr.* £ s. d.
Working Account	30 18 0	
Loan Account		37 16 3
Reserve Fund		19 10 0
Cash in hands of Secretary	14 9	
Cash in Savings Bank (Soufrière) ...	8 8	
Cash in Savings Bank (Barclays) ...	25 4 10	
	£57 6 3	£57 6 3

Statement of Revenue and Expenditure.

Revenue.

	£ s. d.
Loans repaid by Members	16 5 8
Interest paid by Members	13 17 0
Interest on Savings Bank deposit ...	1 16 0
	£31 18 8

Expenditure.

	£ s. d.
Paid Barclays Bank (Loan Account) ...	17 3 4
Paid Barclays Bank (Interest)	3 4 2
Secretary	9 0 0
Audit Fee	1 0 0
Cost of Remittances	2 2
Messenger	1 6
	£30 11 2

LABORIE AGRICULTURAL CREDIT SOCIETY.

Balance Sheet at 31.7.27.

	Dr. £ s. d.	*Cr.* £ s. d.
Loan Account		9 11 3
Working Account	2 19 11	
Reserve Fund		19 12 0
Cash to credit	26 3 4	
	£29 3 3	£29 3 3

Statement of Revenue and Expenditure.

Revenue.

	£	s.	d.
Interest paid by Members	23	0	3
Loans repaid by Members	28	10	10
	£51	11	1

Expenditure.

	£	s.	d.
Barclays Bank (Loan Account)	29	3	7
Barclays Bank (Interest)	16	2	8½
Secretary	8	0	0
Audit Fees	2	0	0
Cost of remittance		0	3
Stationery		2	4
	£55	8	10½

ANSE-LA-RAYE AGRICULTURAL CREDIT SOCIETY.

Balance Sheet at 30.6.27.

	Dr. £	s.	d.	*Cr.* £	s.	d.
Loan Account				1	1	0
Working Account	10	11	0			
Reserve Fund				9	16	0
Cash to credit		6	0			
	£10	17	0	£10	17	0

Statement of Revenue and Expenditure.

Revenue.

	£	s.	d.
Loans repaid by Members	41	0	0
Interest paid	29	5	1
	£70	5	1

Expenditure.

	£	s.	d.
Barclays Bank (D.C. & O.) (Loan Account)	64	19	8
Stationery		1	6
Secretary	6	0	0
Audit Fee	1	0	0
	£72	1	2

VIEUX-FORT AGRICULTURAL CREDIT SOCIETY.

Balance Sheet at 23.7.27.

	Dr. £	s.	d.	*Cr.* £	s.	d.
Loan Account					9	7
Working Account				1	5	4
Reserve Fund				1	9	5
Cash to credit	3	4	4			
	£3	4	4	£3	4	4

Statement of Revenue and Expenditure.

Revenue.

	£	s.	d.
Interest on Savings Bank deposits ...	1	0	0

Expenditure.

	£	s.	d.
Barclays Bank (D.C. & O.)—Interest paid ...		5	4
Barclays Bank (D.C. & O.)—Loan repaid ...	12	11	6
Honorarium to Secretary	3	2	6
Stationery		5	2
Audit fee for period 1.1.26 to 23.7.27. ...	1	0	0
	£17	4	0

MICOUD AGRICULTURAL CREDIT SOCIETY.

Balance Sheet at 17.2.28.

	Dr. £	s.	d.	*Cr.* £	s.	d.
Loan Account	9	3	8½			
Working Account	9	3	0½			
Reserve Fund				18	10	0
Cash to Credit		3	3			
	£18	10	0	£18	10	0

Statement of Revenue and Expenditure.

Revenue.

	£	s.	d.
Interest paid by Members	10	11	1
Refund of Loan	14	11	4
	£25	2	5

Expenditure.

	£	s.	d.
Barclay's Bank—Interest	7	5	11
Barclay's Bank Loan Account	12	2	11
Honorarium to Secretary	4	10	0
Auditor's Fee	1	0	0
Stationery		1	0
	£24	19	10

CHOISEUL AGRICULTURAL CREDIT SOCIETY.

Balance Sheet at 31.12.26.

	Dr. £	s.	d.	*Cr.* £	s.	d.
Working Account	34	16	3			
Loan Account				30	4	10
Reserve Fund				11	8	0
Cash to Credit	6	16	7			
	£41	12	10	£41	12	10

Statement of Revenue and Expenditure.

Revenue.

	£	s.	d.
Interest paid by Members	10	6	6
Loans repaid by Members	7	6	8
	£17	13	2

Expenditure.

	£	s.	d.
Barclays Bank (Loan Account)	12	3	4
Secretary	4	0	0
	£16	3	4

ADMINISTRATION.

REPORT ON THE WORKING OF THE REUNION ESTATE AND LAND SETTLEMENT.

Land Settlement.—Of the 46 lots situate in the Reunion Land Settlement, 37 have completed payments, making a total sum of £883 10 6 to date. Payments are still being made on the nine lots which remain, and the instalments were fairly well collected.

Choiseul Village Extension.—None of the remaining twenty-three lots were sold during the year.

The Revenue derived from Reunion Estate was :—

	£	s.	d.
Instalments on Land Settlement	14	5	4
Instalments on Village Extension	2	3	0
House Rents	3	5	0
	£19	13	4

The lots were cropped in ground provisions, fruits and sugar-cane.

CORRESPONDENCE AND DISTRIBUTION OF INFORMATION ON AGRICULTURAL MATTERS.

One hundred and seventy Minute Papers and one thousand two hundred and thirty-three letters were dealt with during the year ; information was supplied and official returns rendered for the Blue Book, Canadian Trade Commissioner, International Institute of Agriculture, Rome ; College of Tropical Agriculture, Trinidad ; West India Committee Circular and U.S. Weather Bureau, Porto Rico, and special returns were supplied for the information of the Empire Marketing Board.

EXPENDITURE AND REVENUE.

The Vote for the Agricultural Department was kept at a minimum as follows :—

	£	s.	d.
Personal Emoluments	947	0	0
Transport and Subsistence to Agricultural Superintendent and Staff ...	40	0	0
Subsistence Allowance Assistant Agricultural Superintendent (fixed) ...	36	0	0
Forage Allowance Agricultural Superintendent	48	0	0
,, ,, Assistant Agricultural Superintendent	48	0	0
Labour, Agricultural and Botanical Station, Reunion, and Castries Botanic Gardens	350	0	0
Seeds, Plants, Manures, &c., and plant disinfection	50	0	0
Miscellaneous Requisites	40	0	0
Printing, Binding, and Purchase of Books	8	0	0
Maintenance of Transport Animals, Carts and Pedigree Pigs	24	0	0
Minor repairs to Buildings	10	0	0
Contingencies	15	0	0
Freight and transport of plants	10	0	0
	£1,626	0	0

The total actual expenditure was £1,602 0 10.

RENENUE.

Revenue derived from the sale of nursery stock, produce, &c., from the Agricultural Stations was :—

	£	s.	d.
Botanic Gardens, Castries	12	10	11
Experiment Station, Reunion	46	13	2
Land Settlement, Rents, &c.	19	13	4
	£78	17	5

OFFICIAL VISITORS TO THE STATIONS.

His Excellency Sir Frederick Seton James, K.B.E., C.M.G., Governor and Commander-in-Chief, Windward Islands, and Lady James ; His Honour Capt. O. Plunkett, Acting Administrator, and Mrs. Plunkett ; Mr. G. Evans, M.A., C.I.E., Principal of the Imperial College of Tropical Agriculture, Trinidad ; Professor H. A. Ballou, M.Sc., Commissioner of Agriculture for the West Indies, Trinidad ; Dr. D. Macphail, Acting Chief Medical Officer, St. Lucia ; Mr. H. C. Sampson, B.I.E., B.Sc., Economic Botanist, Royal Botanic Gardens, Kew ; Professor E. E. Cheesman, B.Sc., A.R.C.S., Imperial College of Tropical Agriculture, Trinidad ; Mr. E. F. S. Shepherd, Department of Agriculture, Mauritius ; Mr. F. L. Squibbs, Assistant Agricultural Superintendent, Dominica ; Dr. H. R. Briton Jones, D.Sc., Ph.D. (Lond.), Mycologist, Imperial College of Tropical Agriculture, Trinidad ; Major L. M. Donaldson, A.D.C. ; Major D. I. Kerr, Chief of Police ; Major F. W. Honnet ; Honourable G. Laffitte ; Reverend and Honourable H. H. Cole, Acting Inspector of Schools ; Captain F. B. Sharp, Inspector of Police ; Mr. F. W. Theeman, Magistrate, II and III Districts ; Mr. O. H. H. Giraudy, Acting Audit Clerk ; Mr. Montagu Free, Brooklyn Botanic Gardens, U.S.A. ; Maude H. Free, Horticulturist, New York, U.S.A. ; Mr. E. H. Babbitt, Apiarist, Hartford, Conn., U.S.A.

Other Visitors to the Stations.

There was a large number of visitors to the Stations during the year.

STAFF CHANGES.

The Agricultural Superintendent was absent on long leave in the United Kingdom from June 15th to December 15th, 1927.

Mr. Bennett Williams, Banana Inspector, was absent on sick leave from September 12th to 15th, 1927.

METEOROLOGICAL OBSERVATIONS.—APPENDIX I.

STATION, REUNION, St. LUCIA, B.W.I.

Longitude=61° 3′ 20″ W. Latitude=13° 46′ 50″ H =210ft.

Month.	Air Temperature.				Absolute Max. and Min.			
	7 a.m.	12 noon	5 p.m.	Mean	Max.	Date	Min.	Date
January	73·7	84·3	80·9	79·6	89	9th	67	3rd
February	74·8	84·3	80 3	79·8	90	16th	65	24th
March	77·3	85·0	81·5	81·3	92	8th	68	12th
April	77·1	83·4	80·9	80·4	89	9th	70	24th
May	78·5	86·8	83·4	82·9	92	18th	70	23rd
June	78·6	83·4	81·1	81·0	89	2nd	71	13th
July	78·7	85·6	83·7	82·7	91	19th	72	4th
August	79·4	88·4	85·2	84·3	96	25th	72	9th
September	79·7	88·0	84·1	83·9	93	8th	71	14th
October	80·0	86·5	82·3	82·9	92	6th	71	15th
November	77·1	86·5	81·7	81·7	92	9th	71	5th
December	75·6	86·0	80·0	80·5	91	20th	66	30th
Year ...	77·5	85·7	82·2	81·7	96	25th Aug.	65	24th Feb.

APPENDIX II.

THER. *ht.*=3′ 0″ RAINGAUGE *hr.*=1′ 0″. REUNION STATION.

Month.	Rainfall (inches)			Weather.		Wind. No. of Observations of								
	Total	Max.	Date	Days of Rain	Days of Gales.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm
January ...	2·74	0·67	11th	16	0	0	18	73	2	0	0	0	0	0
February	1·54	0·28	2nd	16	0	0	11	72	0	0	1	0	0	0
March ...	1·62	0·36	27th	13	0	1	2	77	7	3	2	0	1	0
April ...	6·98	0·95	9th	23	0	1	4	66	17	1	0	0	1	0
May ...	4·77	1·50	22nd	20	0	0	6	69	18	0	0	0	0	0
June ...	15·13	2·30	9th	24	0	0	2	77	11	0	0	0	0	0
July ...	5·15	1·15	12th	17	0	0	8	72	11	0	1	1	0	0
August ...	5·52	1·53	29th	22	0	3	6	67	11	0	1	1	4	0
September	6·04	1·80	25th	26	0	1	20	56	10	0	1	1	0	1
October ..	12·08	5·80	28th	27	1	2	23	45	12	5	1	1	4	0
November	8·23	2·91	27th	24	1	3	21	53	9	2	1	0	1	0
December	1·05	0·38	7th	13	0	10	40	36	3	0	3	0	1	0
Year ...	69·95	5·80	28th Oct.	241	2	21	161	763	11	11	11	4	12	1

MEMORANDUM ON METEOROLOGICAL CONDITIONS FOR THE YEAR 1927, ST. LUCIA, B.W.I.

Rainfall.—The total rainfall recorded at the Botanic Gardens, Castries, for the year 1927, was 105.08 inches, this was 26.28 inches above the average for 28 years (=78.80 inches), and was the highest recorded in the Gardens since the year 1916. Maximum precipitation occurred on March 22nd, with a rainfall of 5 inches.

The distribution of rainfall throughout the year was above normal in March, April, May and June at all stations, and in October when many estates recorded 7 inches of rain on October 28th, and again in November when 5 inches and 7 inches of rain fell on the 12th and 27th respectively.

Temperature.—Temperature records at Reunion Experiment Station show a Mean Noon temperature of 85.7° in the shade, the Maximum temperature being 96°, the Minimum temperature was 65°, giving a range of 31°.

Weather.—The weather generally was wet, with high temperatures in July, August and September; thunderstorms were frequent in November, and a gale occurred on October 28th, with thunderstorms and heavy rains, causing floods in low lying areas.

APPENDIX III.

RAINFALL RETURNS, 1927.

Observation Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Maximum in one day and date.		No. of days on which rain fell.
	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.		
Gros Islet, Reduit Estate	2·91	1·63	4·38	10·17	5·94	14·81	5·34	3·93	8·43	10·36	12·30	1·00	81·20	3·50	Oct. 15th	166
Castries, Corinth ,, ...	3·39	2·28	4·82	10·68	8 53	15·58	7·01	5·30	10·92	12·91	16·19	2·05	99·66	5·84	Nov. 12th	190
Marquis Estate ...	2·34	3·26	8·23	15·40	7·01	13·64	6·26	5·65	6·88	10·47	17·83	2·10	99·07	3·70	,, 12th	194
Choc ,, ...	3·46	2·79	7·28	8·68	6·07	12·20	7·60	6·54	8·24	11·45	16·57	2·47	93·35	5·83	,, 12th	196
Botanic Gardens ...	5·88	3·96	11·62	9·69	7·59	20·79	8·40	8·03	5·70	11·36	13·31	3·75	110·08	5·00	Mch. 22nd	275
Government House ...	3·97	2·74	7·72	8·77	5·95	18·31	5·96	6.72	7·95	10·83	10·25	2·40	91·57	3·95	,, 12th	246
The Barracks, Vigie ...	3·70	3·59	9·48	9·04	6·91	16·22	6·72	7·04	4·45	10·41	12·49	2·18	92·23	5·10	,, 22nd	202
Soucis Estate, Cul-de-Sac	4·58	1·68	6·08	10·64	4·69	18·06	6·32	5·77	8·85	11·99	11·71	2·86	93·23	2·82	Nov. 28th	217
*Crown Lands Est. ,,	...	4·98	7·74	...	...	...	...	...	....	...	...	...	12·72	1·40	Mch. 24th	29
*La Perle Est., Roseau	5·09	2·95	5·78	11·72	...	20·67	...	...	8·42	10·20	8·00	...	72·83	4·80	Oct. 27th	128
Mont D'Or Est., ,, ...	6·74	5·22	6·86	17·67	7·81	18·79	9·69	6·85	11·00	12·25	11·23	4·49	118·60	4·35	,, 28th	265
*Belair Estate, Roseau	4·53	3·80	5·33	13·71	6·10	13·30	7·00	6·00	8·62	·98	...	...	69·37	3·50	Jne. 19th	111
Vanard ,, ,, ...	6·44	10·44	6·37	22·02	9·26	22·32	9·95	8 29	10·16	14·52	14·99	4·00	138·76	8·30	Oct. 29th	207
Ravine Poisson, Roseau	7·25	4·88	7·69	20·05	9·85	23·42	9·92	10·44	7·75	15·19	18·72	7·10	142·26	7·14	Nov. 27th	161
*Ravine Poisson, ,,	7·13	5·80	8·21	23·68	11·00	20·81	9·86	10·04	9·60	...	...	...	106·13	3·51	Apr. 20th	151
Soufrière, La Perle Estate	8·31	5·06	7·57	13 95	7·38	21·32	9·45	7·20	12·81	11·18	12·37	2·74	119·34	3·70	Oct. 28th	208
Ruby Estate ...	6·53	4·32	6·12	12·62	7·22	20·88	9·97	6·90	12·31	12·82	12·81	2·57	115·07	5·40	,, 28th	244
*La Dauphine Estate ...	..	2·74	5·35	15·58	7·48	22·14	6·98	8·09	18·64	18·48	15·11	2·38	122·97	6·70	,, 27th	231
Union Vale Estate ...	3·47	1·90	2·80	10·38	5·25	20·59	6·27	4·99	14·45	15·86	13·44	1·34	100·74	7·40	Sep. 23rd	195
*Beausejour ,, ...	...	...	...	17·13	..	...	7·58	8·16	...	...	14·37	2·70	49·94	4·06	Nov. 27th	104
Chois., Ag. Exper. Station	2·74	1·54	1·62	6·08	4·77	15·13	5·15	5·52	6·04	12·08	8.23	1 05	69·95	5·80	Oct. 28th	241
Park Estate ...	6·34	4·83	5·09	9·87	7·02	18·52	7·34	7·26	13·89	18·20	13·66	3·29	115·31	7·27	,, 28th	265
Woodlands Estate ...	7·68	9·60	14·78	26·53	9·94	19·34	6·90	4·52	14·12	16·84	14·15	4·85	149·25	5·41	,, 28th	273
Laborie, Londonderry Est.	4·58	3·40	4·26	12·01	6·14	16·83	7·34	5·52	12·29	12·25	12·54	2·41	99·57	5·25	,, 28th	263
Black Bay Estate ...	2·50	1·80	1·49	7·85	4·00	12·87	4·70	3·40	3·90	9·40	9·85	1·30	63·06	4·00	Nov. 27th	104
Vieux-Fort, Retraite Est.	3·03	3·10	3·94	7·04	5·03	14·76	5·92	3·41	5·20	12·19	10·26	2·19	76·07	4·28	,, 27th	151
Moule-à-Chique Estate	·98	·62	1·44	5·84	3·27	9·25	2·41	1·93	2·08	10·42	6·34	·90	45·48	3·41	Oct. 28th	165
Beausejour Estate ...	1·98	2·04	2·99	5·69	3·87	10·65	4·22	2·36	3·54	11·24	7·70	1·40	57·68	3 50	Nov. 27th	156
Pointe Sable ,, ...	1·72	1·77	2·80	5·56	4·11	11·88	4·11	2·54	3·51	11·89	6·75	1·23	57·87	3·20	Oct. 28th	132
Micoud, Troumassée Est.	1·62	·53	4·20	7·24	3·10	10·51	2·62	1·64	3·34	12·11	14·66	2·07	63·64	6·62	Nov. 28th	119
Dennery, Mamiku Estate	2·92	2·40	4·81	14·09	5·77	14·09	5·53	3·97	5·44	9·69	19·42	2·20	90·33	5·00	,, 27th	269
Errard Estate ...	4·55	2·55	5·24	14·41	9·18	18·06	8·24	4·04	6·19	12·23	26·11	2·32	113·12	6·22	,, 27th	205
Prospect ,, ...	5·48	4·44	7·09	16 41	9·82	19·27	9·97	6·17	12·86	12·79	30·06	4·38	138·74	7·10	,, 27th	282
La Cayé ,, ...	1·91	2.31	5·58	15·90	5·34	15·13	5·96	2·58	8·27	10·81	19·54	2·05	95·38	4·20	Jne. 19th	167
Resource ,, ...	2·95	3·04	5·61	14·44	5·80	16·07	6·90	7·80	7·22	12·62	22·35	3·09	107·89	5·71	Nov. 12th	196
Richfond ,, ...	2·07	2·18	4·64	10·66	3·58	13·18	4·50	7·31	7.15	11·06	16·09	5·88	88·30	3·82	Jne. 19th	153

* Records incomplete.

PRICES OF NURSERY PLANTS, ETC.

The prices of plants do not include the cost of the boxes or baskets.

All prices specified are for plants of ordinary quality. The prices of plants not included in this list will be fixed by the Agricultural Superintendent.

An addition of 100% is made on the prices for all plants supplied for export from the Colony.

No plants are supplied on Public Holidays.

At least six months previous notice must be given when large quantities of such plants as Coffee, Cacao, Rubber, Nutmegs, Bananas, etc., are required as it is not feasible to keep large supplies of these on hand. At least ten months' notice is required for large supplies of plants such as Para Rubber, the seeds of which have to be specially imported.

Complaints as to the quality or quantity of plants, etc., supplied, or as to the prices charged, should be made in writing and will be referred to the Agricultural Superintendent.

PLANTS.

Oranges	6d per plant
Oranges Sour	3d ,,
Mangoes Grafted	1/- ,,
Lime Plants	1/- per hundred
Coffee Plants	2/6 ,,
Cacao	2d per plant
Eucalyptus	2d ,,
Avocado Pear	3d ,,
Guava	3d ,,
Casuarinas	1d ,,
Palms (various)	6d ,,
Ornamental Plants (various)	2d to 1/- per plant
Seeds per lb. (various)	3d to 6d per lb.
Seeds Vegetable	4d to 6d per packet
Plants for wind-breaks, hedges, etc., other than the above economics	1d to 2d per plant.

"TROPICAL AGRICULTURE"

THE JOURNAL

— OF THE —

IMPERIAL COLLEGE OF TROPICAL AGRICULTURE

PUBLISHED MONTHLY AT TRINIDAD: BRITISH WEST INDIES.

SUBSCRIPTION RATES:

6d. per copy or 6s. per annum, post free throughout the British Empire. 7d. per copy or 7s. per annum post free for all foreign countries.

ADVERTISEMENT RATES:

Can be obtained on application to the Secretary, Imperial College of Tropical Agriculture, 14, Trinity Square, London E.C. 3, or to the Editor, Imperial College of Tropical Agriculture, St. Augustine, Trinidad, British West Indies.